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Model State Information System Training Program. Vol. XII. Program Documentation Subsystem Descriptions. Part 1

Cincinnati Univ, Ohio Southwestern Ohio Regional Computer Ctr

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Volume XII

PROGRAM DOCUMENTATION
Subsystem Descriptions

PART 1

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Office of Water Supply
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The detail systems design, programming, testing, and documentation of a computer system of the scope of the Model State Information System was indeed a major undertaking. Throughout the ten months which were necessary to accomplish this effort, a great number of persons contributed significantly through their input, guidance, and support. The success of this endeavor would not have been possible without the participation and cooperation of those involved. Although it would be impossible to mention everyone, specific recognition is due the following persons.

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Bruce O. Keith
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* PROGRAMS ARE NOT IN ORDER BY MODULE NUMBER, BUT ARE LISTED IN ORDER BY HIPO NUMBER.

Purpose

This manual was developed to aid the systems analyst and programmer in understanding how each program within the Model State Information System (MSIS) was developed. If the user facility finds it necessary to make any alterations to any of the programs, this document will supply all the basic design information which was used to create the original programs.

It is first necessary for the analyst or programmer to review the system overview section to learn the approach which the SouthWestern Ohio Regional Computer Center (SWORCC) took to create MSIS. A series of naming conventions was established across the system which should be maintained if any changes are to be made so that any subsequent changes by different individuals will be made easier.

An explanation of the design philosophy, Hierarchy plus Input/Process/Output (HIPO), is given so that the analyst or programmer will be able to better understand the design packages supplied for each program. Extensive use of a COBOL COPY Library was used to further facilitate program changes. A list of all the COPY members, their general description and which programs use them, is provided. Any change to a COPY member will of course necessitate a recompile of all programs which contain it.

Finally, all programs are arranged by subsystem. There is a general description of each subsystem followed by a Visual Table of Contents to show how the subsystem was developed. A subsystem overview gives detailed information on how the various programs interact. Then each design package is arranged displaying a program narrative followed by the detail design HIPO which was used to code the original program. The HIPO's make reference to exhibits which can be found in the Program Documentation - Exhibits Manual, Volume XII, arranged in exhibit number sequence within subsystem.

System Overview

Introduction

The Model State Information System (MSIS) is a computer based information system designed to be used by the individual states and regional offices to meet the requirements of the "National Interim Primary Drinking Water Regulations" (December, 1974). These regulations were formulated by the U.S. Environmental Protection Agency under the authority of the Safe Drinking Water Act of 1974.

Using as a basis the Program Evaluation Requirements, Concepts and Plans for EPA Safe Drinking Water Program (Office of Water Supply, EPA, October 1975), American Management Systems, Inc. (AMS), performed a feasibility study and general systems design of the Model State Information System (June 15, 1976). Detail systems design, programming, testing, and documentation was carried out by SouthWestern Ohio Regional Computer Center (SWORCC).

MSIS is made up of five required subsystems and four optional subsystems. The five required subsystems are:

Public Water System Inventory Subsystem (PWSI)
Regulations Subsystem (REGS)
Water Quality Compliance Subsystem (WAQC)
Federal Reporting Subsystem (FEDR)
Standard Processing Subsystem (MSIS)

The four optional subsystems are:

Variances and Exemptions Subsystem (VAEX)
Enforcement Actions Subsystem (ENAC)
Sanitary Survey Subsystem (SRVY)
Operator and Mailing Subsystem (OPER)

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General System Approach

The Model State Information System (MSIS) is designed to be standard enough that the individual states can use it on their various computer systems. At the same time, MSIS is flexible enough that the states may select segments of the system that fit their needs and may even easily modify the system to add to its functions.

Modularity of MSIS allows for flexibility. In order to give the States and regions the capability to fulfill their basic responsibilities to OWS, a minimum of five subsystems are required to do MSIS processing. They are the Public Water System Inventory Subsystem, the Water Quality Compliance Subsystem, the Regulations Subsystem, the Federal Reporting Subsystem, and the Standard Processing Subsystem. Four additional subsystems may be added, each at the discretion of the State or Region: the Variances and Exemptions Subsystem, the Sanitary Survey Subsystem, the Enforcement Actions Subsystem, and the Operator and Mailing Subsystem. In this way, the state may selectively add to or replace functions they currently have.

Within the subsystems, there is a built-in flexibility allowing the states to mold the system to better meet their individual needs. As an example, the Regulations Subsystem allows the states to input state regulations in addition to the required federal regulation. Flexibility is also given in report generation by allowing the state to select what information is to be contained on fixed format reports and in what order the report is produced. It must be emphasized, however, that any major changes may also require programming changes.

To contribute to the uniformity of MSIS, the following functions were standardized:

- File Maintenance
- Error Processing
- History Processing
- Report Generation
- Data Editing

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File Maintenance

Adds:

The initial creation of a record on an MSIS file is accomplished with an ADD trasaction (code 00) which must contain all information necessary for processing by MSIS before it can be accepted.

Updates:

Existing data is modified by Update transactions. New data is edited and applied to the files field by field. An erroneous transaction field will not cause the entire transaction to be rejected. Instead, valid fields will be updated and only erroneous fields will need to be corrected and reentered. Since most update transactions refer to several data elements, the following approach is used:

a. If a data element field is blank, the data element on the file is not modified.

b. If the data element field contains a "$" in the leftmost position, the data element is reinitialized (existing data is replaced with blanks or zeros).

c. If transaction code "99" is used, the entire record is flagged as deleted. The only exception is in the Water Quality Compliance Subsystem, program WAQC010, where the delete transaction code is "01".

d. All other values can be used to replace the current value of the data element in the file provided that the new data is valid. Refer to the Data Element Dictionary (DED) to find the edit criteria for data elements.

Error Processing

Prior to actual processing, however, errors in processing options records must be handled in the individual programs. Errors created during actual processing of create and update modules in MSIS are handled by Standard Error Processing, a part of the Standard Processing Subsystem (MSIS). These errors created while updating or maintaining files, create the Standard Error File (SEF).

The SEF is processed by Standard Error Processing program (MSIS010) using the Error Message Table (EMT), to interpret the errors, and creating the Data Entry Error Report (Exhibit MSIS.313).

The Optional Error File (OEF) is an optional file which may be produced during Standard Error Processing so that the errors can be corrected by some text editing facility.

History Processing

In order to maintain an audit trail of the more important files of MSIS, two history processes are used. The Standard History Processing programs (MSIS.020,040,050), a part of the Standard Processing Subsystem, are used to record and make use of a history of all changes made to the Violations File (VIF), the Variances and Exemptions File (VEF), the Enforcement Actions File (EAF), and the Operator and Mailing File (OMF). These history records are maintained on the Standard History File (SHF).

The Public History File (PHF) is used to maintain a similar audit trail for the more complicated Public Water File (PWF) within the Public Water System Inventory Subsystem, (PWSI.070, 080, 090).

Report Generation

To permit the user to select and order records from files according to very flexible criteria, standard selection and sort methods are used throughout MSIS. Standard selection and sort processing options formats are used in all MSIS programs.

The selection process allows a maximum of thirty-five (35) data elements to be used as keys to determine if the data record qualifies to be selected. The user, therefore, can have an ample range for selecting records to be reported.

Additionally, the user has the option to have the records sorted in a meaningful sequence for the generation of a report. The user must keep in mind the length of the data elements to be used for sorting. A maximum of thirty (30) characters, accumulating all the lengths of the data elements, is allowed with no one length being greater than fifteen (15). Any data element with a length greater than fifteen will only use the first fifteen characters of the data element for sorting.

Data Editing

Some edit criteria is contained in the Code Value Table (CVT). The CVT contains acceptable data values in separate files for the eight subsystems of MSIS and one file of common data element values shared by two or more subsystems. (These common data elements are listed in Appendix A of the Data Element Dictionary). The CVT is used whenever possible to determine acceptable values.

Naming Conventions

1. File Name Abbreviations

Each file and table has associated with it a three letter abbreviation used in the full, programming name as an abbreviation for the file and a two letter mnemonic prefix used in the files' data element mnemonic names.

File Name	File ID	Mnemonic Prefix	Subsystem
Code Value Table	CVT	CV	MSIS
Compliance Status File	CSF	(none)	WAQC
Data Element Table	DET	DE	MSIS
Deviations File	DVF	(none)	FEDR
Enforcement Actions File	EAF	EA	ENAC
Error Message Table	EMT	EM	MSIS
Laboratory Table	LBT	LB	WAQC
Optional Error File	OEF	OE	MSIS
Operator and Mailing File	OMF	OM	OPER
Public History File	PHF	PH	PWSI
Periodic Sample File	PSF	PS	WAQC
Public Water File	PWF	PW	PWSI
Public Water Table	PWT	PT	PWSI
Regulations File	RGF	RG	REGS
Sample Analysis File	SAF	SA	WAQC
Standard Error File	SEF	SE	MSIS
Standard History File	SHF	SH	MSIS
Variances and Exemptions File	VEF	VE	VAEX
Violations File	VIF	VI	WAQC

2. COBOL Programming Names

The file and table data element names used in programming are assigned using the three letter file ID followed by a dash and a one (1) to twenty-six (26) character descriptive name. Example: PWF-PLANT-POPULATION-SERVED. (ANSI COBOL allows a maximum of thirty characters for a data name.)

3. Mnemonic Names

The Data Elements of some of the permanent files and tables have mnemonic names in addition to the COBOL programming names. The mnemonic name is formed using the two letter mnemonic prefix followed by a dash and a one (1) to seven (7) character abbreviation of the descriptive portion of the corresponding programming name. Example: PW-PL-POPL for PWF-PLANT-POPULATION-SERVED. The mnemonic names are used

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when filling in the SORT and SELECTION processing option forms, and also appear on the Standard Error Report.

4, Exhibits

Exhibit numbers are prefixed by the four letter subsystem prefix followed by:

100-199 for input forms

200-299 for record definitions

300-399 for report layouts

400-499 for turnaround documents

Files and Tables

The following are the permanent files and tables of MSIS. They are listed by the subsystem responsible for the files' creation.

1. Public Water System Inventory Subsystem (PWSI)

   a. Public Water File (PWF), Exhibit PWSI.200, Data Element Catalogue Numbers 145 through 264, 701 and 702: The PWF is a variable length, sequential access file of detailed information about all Public Water Systems in the state.

   b. Public Water Table (PWT), Exhibit PWSI.201, Data Element Catalogue Numbers 265 through 278, and 703: The PWT is a fixed length, direct access file of selected information from the PWF used primarily for supplying information on reports throughout MSIS.

   c. Public History File (PHF), Exhibit PWSI.202, Data Element Catalogue Numbers 310 through 318: The PHF is a fixed length, sequential access history file of all modifications to the PWF used as an audit trail of the file.

2. Regulations Subsystem (REGS)

   a. Regulations File (RGF), Exhibit 250 through 257, Data Element Catalogue Numbers 1 through 144: The RGF is a fixed length, sequential access file of all state and federal drinking water quality regulations.

3. Water Quality Compliance Subsystem (WAQC)

   a. Periodic Sample File (PSF), Exhibit WAQC.252, Data Element Catalogue Numbers 399 through 429, 817 and 818, and 900 through 902: The PSF is fixed length, sequential access file of all water quality sample transactions.

   b. Sample Analysis File (SAF), Exhibit WAQC.254, Data Element Catalogue Numbers 356 through 392, 807 through 816. The SAF is a fixed length, sequential access file containing a record for each chemical or radiological sample and a summary record of bacteriological and turbidity samples. The SAF is a summary of the PSF used to reduce the great numbers of sample records kept.

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c. Violations File (VIP), Exhibit WAQC.255, Data Element Catalogue Numbers 325 through 355 and 800 through 806, and 819. The VIP is a fixed length, sequential access file of the violations to the drinking water regulations.

d. Laboratory Table (LBT), Exhibit WAQC.250, Data Element Catalogue Numbers 319 through 325 and 820: The LBT is a fixed length, direct access file of laboratories authorized to analyze water samples.

e. Compliance Status File (CSF), Exhibit WAQC.257, Data Element Catalogue Numbers 516 through 533. The CSF is a fixed length, sequential access file of information which deals with compliance determination.

4. Federal Reporting Subsystem (FEDR)

a. Deviations File (DVF), Exhibit FEDR.202, Data Element Catalogue Numbers 492 through 511: The DVF is a fixed length, sequential access file of violations, variances, and exemptions. The DVF is created in FEDR for submission to EPA.

5. Standard Processing Subsystem (MSIS)

a. Code Value Table (CVT), Exhibit MSIS.206, Data Element Catalogue Numbers 279 through 284: The CVT is a fixed length, sequential access file of data element values used in editing in MSIS.

b. Data Element Table (DET), Exhibit MSIS.201, Data Element Catalogue Numbers 285 through 293: The DET is a fixed length, sequential access file of data element information used in MSIS.

c. Error Message Table (EMT), Exhibit MSIS.205, Data Element Catalogue Numbers 294 through 297: The EMT is a fixed length, sequential access file of errror codes and associated messages used in standard error processing.

d. Optional Error File (OEF), Exhibit MSIS.215, Data Element Catalogue Numbers 308 and 309: The OEF is a fixed length, sequential access file of errors created during MSIS processing used for correcting the errors using text editing facilities.

e. Standard Error File (SEF), Exhibit MSIS.207, Data Element Catalogue Numbers 298 through 300: The SEF is a fixed length, sequential access file of errors created during processing in MSIS.

f. Standard History File (SHF), Exhibit MSIS.202 Data Element Catalogue Numbers 301 through 307: The SHF is a fixed length, sequential access file of changes made to the Violations File (VIF), the Enforcement Actions File (EAF), the Variances and Exemptions File (VEF), and the Operator and Mailing File (OMF).

6. Variances and Exemptions Subsystem (VAEX)

a. Variances and Exemptions File (VEF), Exhibit VAEX.212, Data Element Catalogue Numbers 455 through 477: The VEF is a variable length, sequential access file of the variances and exemptions granted by the state to public water systems.

7. Enforcement Actions Subsystem (ENAC)

a. Enforcement Actions File (EAF), Exhibit ENAC.202, Data Element Catalogue Numbers 430 through 454: The EAF is a variable length, sequential access file of enforcement actions being monitored by the state.

8. Operator and Mailing Subsystem (OPER)

a. Operator and Mailing File (OMF), Exhibit OPER.200, Data Element Catalogue Numbers 478 through 491: The OMF is a variable length, sequential access file of mailing information and records of certified operators.

(Sanitary Survey Subsystem (SRVY) does not create any permanent files.)

FILE		SUBSYSTEM								
		PWSI	REGS	FEDR	WAQC	MSIS	VAEX	ENAC	OPER	SRVY
Created by Subsystem	File Mnemonic									
PWSI	PWF	I/O		I/O	I					I
	PWT	O			I		I	I	I	
	PHF	I/O								
REGS	RGF		I/O		I					
FEDR	DVF			O						
WAQC	PSF				I/O					
	SAF				I/O					
	CSF				I/O					
	LBT	I			I/O					
	VIF			I	I/O					I
MSIS	SEF	O	O		O	I/O	O	O	O	
	OEF					O				
	CVT	I	I	I	I	O	I	I	I	I
	DET	I			I	I/O	I	I	I	I
	EMT					I/O				
	SHF				O	I/O	O	O	O	
VAEX	VEF			I			I/O			
ENAC	EAF							I/O		
OPER	OMF								I/O	

Hierarchy plus Input/Process/Output (HIPO) Diagram

HIPO is an acronym for Hierarchy plus Input/Process/Output. HIPO's are graphic tools which describe the functions of a computer program. They show what is being done (function), not how it is being done (logic). All program modules have incorporated the HIPO in their design process.

There are two types of HIPO's; the Visual Table of Contents (VTOC) and the Input/Process/Output form.

1. Visual Table of Contents (VTOC) (HIPO diagram 1)

   a. The body of the VTOC looks like an organization chart.

   b. The legend defines the three symbols used on the Input/Process/Output form, two arrow symbols and the "at" symbol.

   c. VISUAL TABLE OF CONTENTS: lists the members illustrated on the form.

2. Input/Process/Output Form (Hipo design #2)

   a. DIAGRAM TYPE: states whether the HIPO is an Overview or Detail.

   b. SUBSYSTEM: the MSIS subsystem name to which the program belongs.

   c. DATE: the date submitted to EPA for approval or the date the form was updated.

   d. PAGE _ OF_: is the number of pages for this HIPO diagram number.

   e. DIAGRAM NO: the number which uniquely identifies the HIPO. It is the same numbering system that is defined in the VTOC.

   f. DESCRIPTION: a brief description of the function depicted by this HIPO.

   g. INPUT: contains the input (files, tables, input data etc.) to the steps of the program function(s) listed in PROCESS.

   h. PROCESS: contains a brief description of a functional step or steps for the HIPO.

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i. OUTPUT: contains the output (files, tables, reports, etc) created by the functional step(s) described in the PROCESS section.

j. STEP: contains the step numbers matching those in the PROCESS section above.

k. EXTENDED DESCRIPTION: contains a more complete explanation of the PROCESS steps.

l. REFERENCE/HIPO: for an Overview HIPO, contains references to more detailed HIPO's describing the steps; for detail diagrams the reference repeats the HIPO's DIAGRAM NUMBER.

m. REFERENCE/PROGRAM: contains the number of the program which performs the function being described.

n. REFERENCES/OTHER: contains references to other documents that contain further information about or illustrate the step's input, process, or output. Exhibit numbers are most commonly referenced with a three-digit number for an exhibit of the subsystem being described. A three-digit number preceeded by the four-letter subsystem prefix is used for an exhibit belonging to another subsystem.

o. The arrows used at the top left and bottom right corners of the PROCESS block are used to show flow from one HIPO to another at the same level as they would appear in the VTOC.

MSIS Visual Table of Contents

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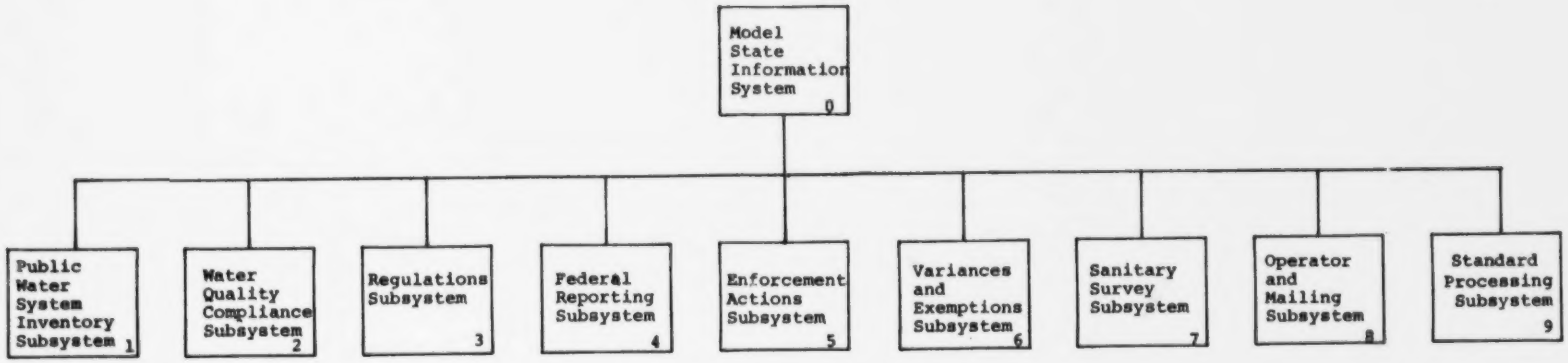
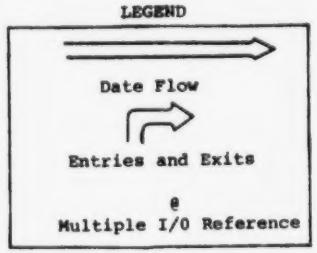
System: Model State Information System (MSIS)

Description: Model State Information System (MSIS) VTOC

Diagram Type: VTOC

Diagram Number: 0


Model State Information System 0
Public Water System Inventory Subsystem 1
Water Quality Compliance Subsystem 2
Regulations Subsystem 3
Federal Reporting Subsystem 4
Enforcement Actions Subsystem 5
Variances and Exemptions Subsystem 6
Sanitary Survey Subsystem 7
Operator and Mailing Subsystem 8
Standard Processing Subsystem 9



VISUAL TABLE OF CONTENTS

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Copy Library

A library of COBOL COPY modules has developed to facilitate initial programming and subsequent maintenance of the program modules. Rather than having to make multiple program changes, the change need only be made to the copy member and then all program modules containing that member can be recompiled. The data set name of the library is MSIS.COPY.LIBRARY. The library members have certain naming conventions which were maintained during development of MSIS. A member name can have a maximum length of eight (8) characters. SWORCC has developed a prefix format in the following manner:

FD for all file descriptions;
REC for all record descriptions;
RTN for all data division subroutines;
SD for all sort file descriptions;
SEL for all SELECT and ASSIGN statements from a program module;
WS for all working storage data.

All COPY members are arranged alphabetically within the library at installation and can be found similarly in the following list of its contents:

COPY Library Contents

Name: FDBLK133 Number of Lines: 3
Used by Program(s): REGS010
Description: FD for print record of 133 characters

Name: FDBLOK80 Number of Lines: 3
Used by Program(s): WAQC210
Description: FD for 80 character record with standard labels

Name: FDCRD Number of Lines: 3
Used by Program(s): ENAC010 FEDR010 MSIS030 MSIS050 PWSI010
PWSI030 PWSI040 PWSI050 PWSI090 PWSI120
PWSI130 REGS020 SRVY020 VAEX010 WAQC011
WAQC020 WAQC025 WAQC040 WAQC041 WAQC050
WAQC051 WAQC120 WAQC130 WAQC150 WAQC170
WAQC180 WAQC220
Description: FD for standard card file

Name: FDCSF Number of Lines: 3
Used by Program(s): WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
WAQC036 WAQC130
Description: FD for Compliance Status File

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Name: FDDVF Number of Lines: 3
Used by Program(s): FEDR020
Description: FD for Deviations File (DVF)

Name: FDEACHRP Number of Lines: 4
Used by Program(s): ENAC020 ENAC030 ENAC040
Description: FD for Enforcement Actions Case History Report

Name: FDEAF Number of Lines: 4
Used by Program(s): ENAC020
Description: FD for Enforcement Actions File (EAF)

Name: FDEAF010 Number of Lines: 3
Used by Program(s): ENAC010
Description: FD for Enforcement Actions Master File

Name: FDECHLAB Number of Lines: 3
Used by Program(s): ENAC010
Description: FD for Emforcement Actions Case History File

Name: FDFDRSRT Number of Lines: 1
Used by Program(s): FEDR020
Description: FEDR Sorted file

Name: FDFEDR10 Number of Lines: 3
Used by Program(s): FEDR010 FEDR020
Description: FD for data file

Name: FDLBT Number of Lines: 2
Used by Program(s): PWSI010 WAQC010 WAQC032 WAQC033 WAQC034
WAQC035 WAQC036 WAQC120 WAQC210
Description: FD for Lab Table (LBT)

Name: FDOMF Number of Lines: 3
Used by program(s): OPER010 OPER020
Description: FD for Operator & Mailing File (OMF)

Name: FDOMFDRF Number of Lines: 3
Used by Program(s): OPER010 OPER020 OPER040
Description: FD for Operator and Mailing DRF

Name: FDOMFML Number of Lines: 3
Used by Program(s): OPER020 OPER050
Description: FD for Mailing Label File

Name: FDOMFORF Number of Lines: 3
Used by Program(s): OPER010 OPER020 OPER030
Description: FD for Operator & Mailing Report

Name: FDPROCFL Number of Lines: 2
Used by Program(s): WAQC010 OPER010
Description: FD for PROC files

Name: FDPRT Number of Lines: 3
Used by Program(s): ENAC010 ENAC020 ENAC030 ENAC040 FEDR010
FEDR020 MSIS010 MSIS020 MSIS030 MSIS040
MSIS050 OPER010 OPER020 OPER030 OPER040
OPER050 PWSI010 PWSI020 PWSI030 PWSI040
PWSI050 PWSI060 PWSI070 PWSI080 PWSI090
PWSI120 PWSI130 REGS020 SRVY010 SRVY020
VAEX010 VAEX020 VAEX030 VAEX040 VAEX041
VAEX050 WAQC010 WAQC011 WAQC020 WAQC025
WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
WAQC036 WAQC038 WAQC040 WAQC041 WAQC050
WAQC051 WAQC060 WAQC061 WAQC070 WAQC080
WAQC090 WAQC100 WAQC110 WAQC111 WAQC112
WAQC113 WAQC120 WAQC125 WAQC130 WAQC140
WAQC150 WAQC170 WAQC180 WAQC200 WAQC210
WAQC220
Description: FD for 133 character print record

Name: FDPSF142 Number of Lines: 3
Used by Program(s): WAQC010 WAQC011 WAQC031 WAQC032 WAQC033
WAQC034 WAQC035 WAQC036 WAQC038
Description: FD for Periodic Sampling - type file

Name: FDPSF146 Number of Lines: 3
Used by Program(s): WAQC010
Description: FD for Periodic Sample File (PSF)

Name: FDPWS200 Number of Lines: 3
Used by Program(s): FEDR010 PWSI010 PWSI020 PWSI030 PWSI040
PWSI050 PWSI060 PWSI130 SRVY010 SRVY020
WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
WAQC036 WAQC037 WAQC130
Description: FD for Public Water Files (PWF)

Name: FDPWS201 Number of Lines: 2
Used by Program(s): ENAC010 ENAC030 OPER010 PWSI130 VAEX010
VAEX040 WAQC010 WAQC100 WAQC120 WAQC125
Description: FD for Public Water Table (PWT)

Name: FDPWS203 Number of Lines: 3
Used by Program(s): PWSI120
Description: FD for National Public Water File

Name: FDPWS204 Number of Lines: 3
Used by Program(s): PWSI010 PWSI120
Description: FD for Public Water File transactions

Name: FDPW202 Number of Lines: 3
Used by Program(s): PWSI010 PWSI070 PWSI080 PWSI090
Description: FD for Public History File (PHF)

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Name: FDRGF          Number of Lines: 3
Used by Program(s): REGS010 REGS020 WAQC031 WAQC032 WAQC033
                    WAQC034 WAQC035 WAQC036 WAQC130
Description: FD for Regulations File (RGF)

Name: FDSAF          Number of Lines: 3
Used by Program(s): WAQC020 WAQC025 WAQC031 WAQC032 WAQC033
                    WAQC034 WAQC035 WAQC036 WAQC037 WAQC038
                    WAQC100 WAQC110 WAQC111 WAQC112 WAQC113
                    WAQC220
Description: FD for Sample Analysis File (SAF)

Name: FDSEF          Number of Lines: 3
Used by Program(s): ENAC010 MSIS010 MSIS020 OPER010 PWSI010
                    PWSI070 REGS010 VAEX010 WAQC010 WAQC020
                    WAQC120 WAQC210
Description: FD for Standard Error File (SEF)

Name: FDSRTREC       Number of Lines: 1
Used by Program(s): MSIS040
Description: Sort file of 110 position record

Name: FDSRT200       Number of Lines: 1
Used by Program(s): PWSI060
Description: Sort record for PWF

Name: FDSSPRI        Number of Lines: 3
Used by Program(s): SRVY010 SRVY020
Description: FD for SRVY priority report file

Name: FDSSSCH        Number of Lines: 3
Used by Program(s): SRVY010
Description: FD for Sanitary Survey Schedule File

Name: FDTMPLBT       Number of Lines: 3
Used by Program(s): WAQC210
Description: FD for Lab Table (LBT)

Name: FDTMPPOS       Number of Lines: 3
Used by Program(s): REGS010 MSIS040
Description: FD for REGS010   POS file

Name: FDTMP144       Number of Lines: 3
Used by Program(s): PWSI080
Description: FD for temporary data set of selected records

Name: FDVEF          Number of Lines: 3
Used by Program(s): PEDR020 VAEX010 VAEX040
Description: FD for Variances & Exemptions File (VEF)
```

Name: FDVEFCA Number of Lines: 3
Used by Program(s): VAEX030
Description: FD for Variances & Exemptions Compliance in Arrears File

Name: FDVEFCS Number of Lines: 3
Used by Program(s): VAEX020
Description: FD for Variances & Exemptions Compliance Schedule File

Name: FDVEFRF Number of Lines: 3
Used by Program(s): VAEX040 VAEX041 VAEX050
Description: FD for Variances & Exemptions Report File

Name: FDVIF Number of Lines: 3
Used by Program(s): FEDR020 SRVY010 WAQC120 WAQC125
Description: FD for Violations File (VIF)

Name: FDVIFI Number of Lines: 3
Used by Program(s): WAQC040 WAQC041 WAQC050 WAQC051 WAQC060
WAQC061 WAQC070 WAQC080 WAQC090
Description: FD for VIFI file

Name: FDVIFMCL Number of Lines: 3
Used by Program(s): WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
WAQC036
Description: FD for Violations of MCL Reports

Name: FDWQ150 Number of Lines: 3
Used by Program(s): WAQC130
Description: FD for WAQC130

Name: FDWQ200 Number of Lines: 3
Used by Program(s): WAQC130 WAQC200
Description: FD for WAQC130 & WAQC200

Name: FD154 Number of Lines: 3
Used by Program(s): WAQC140 WAQC150 WAQC170 WAQC180
Description: FD for WAQC150, 140, 170, 180

Name: FD3120 Number of Lines: 3
Used by Program(s): REGS010
Description: FD for 80 byte record, blocked 39

Name: FD5708 Number of Lines: 3
Used by Program(s): VAEX010
Description: FD for 662 to 3348 variable length record

Name: FD5768 Number of Lines: 3
Used by Program(s): VAEX010
Description: FD for 678 to 3378 variable length record

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Name: FD80LAB      Number of Lines: 3
Used by Program(s): ENAC010 ENAC020 ENAC030 FEDR010 MSIS010
                    MSIS020 MSIS030 MSIS040 MSIS050 OPER010
                    OPER020 PWSI010 PWSI020 PWSI030 PWSI040
                    PWSI050 PWSI060 PWSI070 PWSI080 PWSI120
                    SRVY010 VAEX010 VAEX040 WAQC010 WAQC011
                    WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
                    WAQC036 WAQC037 WAQC038 WAQC040 WAQC041
                    WAQC050 WAQC051 WAQC060 WAQC061 WAQC070
                    WAQC080 WAQC090 WAQC100 WAQC110 WAQC111
                    WAQC112 WAQC113 WAQC120 WAQC125 WAQC130
                    WAQC210
Description: FD for table records, 80 characters

Name: HDRSTAT      Number of Lines: 134
Used by Program(s): ENAC010 MSIS020 MSIS030 MSIS050 OPER010
                    PWSI070 REGS010 VAEX010 WAQC010 WAQC020
                    WAQC120
Description: Working Storage for Standard Statistics Report

Name: OC01         Number of Lines: 1
Used by Program(s): ENAC010 ENAC020 ENAC030 ENAC040 FEDR010
                    FEDR020 MSIS010 MSIS020 MSIS030 MSIS040
                    MSIS050 OPER010 OPER020 OPER030 OPER040
                    OPER050 PWSI010 PWSI020 PWSI030 PWSI040
                    PWSI050 PWSI060 PWSI070 PWSI080 PWSI090
                    PWSI120 PWSI130 REGS020 SRVY010 SRVY020
                    VAEX010 VAEX020 VAEX030 VAEX040 VAEX041
                    VAEX050 WAQC010 WAQC011 WAQC020 WAQC025
                    WAQC031 WAQC034 WAQC035 WAQC036 WAQC037
                    WAQC038 WAQC040 WAQC041 WAQC050 WAQC051
                    WAQC060 WAQC061 WAQC070 WAQC080 WAQC090
                    WAQC100 WAQC110 WAQC111 WAQC112 WAQC113
                    WAQC120 WAQC125 WAQC130 WAQC140 WAQC150
                    WAQC170 WAQC180 WAQC200 WAQC210 WAQC220
Description: Object Computer name

Name:  RECCDLAB    Number of Lines: 13
Used by Program(s): WAQC130 WAQC200
Description:  Record layout for WAQC200

Name:  RECCHLAB    Number of Lines: 5
Used by Program(s): WAQC130 WAQC200
Description: Record layout for WAQC200

Name: RECCSF       Number of Lines: 31
Used by Program(s): WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
                    WAQC036 WAQC130
Description: Record layout for Compliance Status File
```

Name: RECCVT Number of Lines: 14
Used by Program(s): ENAC010 ENAC030 FEDR010 MSIS030 OPER010
PWSI120 REGS010 SRVY010 VAEX010 WAQC010
WAQC032 WAQC033 WAQC036 WAQC100 WAQC120
WAQC130 WAQC210
Description: Record description of Code Value Table (CVT)

Name: RECCVTOM Number of Lines: 14
Used by Program(s): OPER010
Description: Record description of Code Value Table (CVT) for
Operator & Mailing

Name: RECCVTRG Number of Lines: 14
Used by Program(s): REGS010 ENAC030
Description: Record description of Code Value Table (CVT) for
Regulations

Name: RECDATE Number of Lines: 7
Used by Program(s): FEDR010 FEDR020
Description: Record description of Deviations File (DVF) date record.

Name: RECDET Number of Lines: 27
Used by Program(s): ENAC020 MSIS010 MSIS030 OPER020 PWSI020
PWSI030 PWSI040 PWSI050 PWSI060 SRVY010
VAEX040 WAQC011 WAQC040 WAQC041 WAQC050
WAQC051 WAQC060 WAQC061 WAQC070 WAQC080
WAQC090 WAQC100 WAQC110 WAQC111 WAQC112
WAQC113 WAQC125
Description: Record description of Data Element Table (DET)

Name: RECDVFI Number of Lines: 8
Used by Program(s): FEDR010
Description: Record description of Deviations File PROC record

Name: RECEAF Number of Lines: 36
Used by Program(s): ENAC010 ENAC020
Description: Record description of Enforcement Action File (EAF)

Name: RECEAFCH Number of Lines: 50
Used by Program(s): ENAC010 ENAC020 ENAC030 ENAC040
Description: PROC and output record for EAF Case History
Report File

Name: RECEMT Number of Lines: 12
Used by Program(s): MSIS010 MSIS030
Description: Record description of Error Message Table (EMT)

Name: RECHSCHD Number of Lines: 10
Used by Program(s): WAQC130 WAQC140 WAQC150 WAQC170 WAQC180
Description: Record layout for Sample Analysis Scheduling
File

Name: RECLBT Number of Lines: 20
Used by Program(s): PWSI010 WAQC010 WAQC032 WAQC033 WAQC034
WAQC035 WAQC036 WAQC120 WAQC210
Description: Record description of Lab Table (LBT)

Name: RECMSI Number of Lines: 4
Used by Program(s): MSIS030
Description: Record description of PROC card

Name: RECMSIPG Number of Lines: 6
Used by Program(s): MSIS050
Description: Record description of PROC card for MSIS050

Name: RECMSISH Number of Lines: 9
Used by Program(s): MSIS020 OPER010
Description: Record description of PROC card for MSIS020

Name: RECOEF Number of Lines: 4
Used by Program(s): MSIS010
Description: Record description of Optional Error File

Name: RECOMDRF Number of Lines: 23
Used by Program(s): OPER010 OPER020 OPER040
Description: Record description of Operator and Mailing
Distribution Report File

Name: RECOMF Number of Lines: 19
Used by Program(s): OPER010 OPER020
Description: Record description of Operator & Mailing File (OMF)

Name: RECOMFML Number of Lines: 12
Used by Program(s): OPER020 OPER050
Description: Record description of Operator and Mailing
Label File

Name: RECOMO Number of Lines: 19
Used by Program(s): OPER010
Description: Record description of operator and Mailing
File (OMF)

Name: RECOMRPT Number of Lines: 28
Used by Program(s): OPER010 OPER020 OPER030
Description: Record description of Operator & Mailing Report

Name: RECOMTRN Number of Lines: 31
Used by Program(s): OPER010
Description: Record description of Operator and Mailing
Transactions

Name: RECPHFPR Number of Lines: 4
Used by Program(s): PWSI080
Description: Record description of Public History PROC

Name: RECPHFST Number of Lines: 7
Used by Program(s): PWSI070 PWSI080
Description: Record description of Public History SORT

Name: RECPHFS1 Number of Lines: 6
Used by Program(s): PWSI080
Description: Record description of Public History SEL1

Name: RECPHFS2 Number of Lines: 5
Used by Program(s): PWSI080
Description: Record description of Public History SEL2

Name: RECPHOUT Number of Lines: 11
Used by Program(s): PWSI010 PWSI070 PWSI080 PWSI090
Description: Record description of Public History File
(PHF)

Name: RECPRCOM Number of Lines: 7
Used by Program(s): OPER010
Description: Record description of PROC for OPER010

Name: RECPRC10 Number of Lines: 12
Used by Program(s): PWSI010
Description: PROC for SEF data entry and update

Name: RECPRC30 Number of Lines: 10
Used by Program(s): PWSI030 PWSI040 PWSI050
Description: Record description of PROC for PWSI030-50

Name: RECPRC60 Number of Lines: 11
Used by Program(s): PWSI010 PWSI060 SRVY020
Description: Record description of PROC for PWSI060

Name: RECPROC Number of Lines: 4
Used by Program(s): MSIS040
Description: Record description of general PROC record

Name: RECPRT Number of Lines: 3
Used by Program(s): ENAC010 ENAC020 ENAC030 ENAC040 FEDR010
FEDR020 MSIS010 MSIS020 MSIS030 MSIS040
MSIS050 OPER010 OPER020 OPER030 OPER040
OPER050 PWSI010 PWSI020 PWSI030 PWSI040
PWSI050 PWSI060 PWSI070 PWSI080 PWSI090
PWSI120 PWSI130 REGS010 REGS020 SRVY010
SRVY020 VAEX010 VAEX020 VAEX030 VAEX040
VAEX041 VAEX050 WAQC010 WAQC011 WAQC020
WAQC025 WAQC031 WAQC032 WAQC033 WAQC034
WAQC035 WAQC036 WAQC038 WAQC040 WAQC041
WAQC050 WAQC051 WAQC060 WAQC061 WAQC070
WAQC080 WAQC090 WAQC100 WAQC110 WAQC111
WAQC112 WAQC113 WAQC120 WAQC125 WAQC130
WAQC140 WAQC150 WAQC170 WAQC180 WAQC200
WAQC210 WAQC220
Description: Record description of general print line

Name: RECPRT2 Number of Lines: 3
Used by Program(s): PWSI060 PWSI080 MSIS040
Description: Record description of general print line

Name: RECPSF Number of Lines: 52
Used by Program(s): WAQC010 WAQC031 WAQC032 WAQC033 WAQC034
WAQC035 WAQC036
Description: Record description of Periodic Sample File (PSF)

Name: RECPWFPR Number of Lines: 4
Used by Program(s): PWSI130
Description: PROC date for PWSI

Name: RECPWINP Number of Lines: 146
Used by Program(s): PWSI020
Description: Record description of Public Water File (PWF)

Name: RECPW200 Number of Lines: 145
Used by Program(s): FEDR010 PWSI010 PWSI020 PWSI030 PWSI040
PWSI050 PWSI060 PWSI130 SRVY010 SRVY020
WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
WAQC036 WAQC037 WAQC130
Description: Record description of Public Water File (PWF)

Name: RECPW201 Number of Lines: 24
Used by Program(s): ENAC010 ENAC030 OPER010 PWSI030 VAEX010
VAEX040 WAQC010 WAQC100 WAQC120 WAQC125
Description: Record description of Public Water Table
and header record

Name: RECPW202 Number of Lines: 11
Used by Program(s): PWSI090
Description: Record description of Public History File as input

Name: RECPW204 Number of Lines: 196
Used by Program(s): PWSI010 PWSI120 VAEX010
Description: Record descriptions of Public Water File transactions

Name: RECRESRT Number of Lines: 4
Used by Program(s): WAQC150 WAQC170 WAQC180
Description: RESTART record for SAF

Name: RECRGF Number of Lines: 203
Used by Program(s): REGS010 REGS020 WAQC031 WAQC032 WAQC033 WAQC034 WAQC035 WAQC036 WAQC130
Description: Record description of Regulations File (RGF)

Name: RECRGPRC Number of Lines: 4
Used by Program(s): REGS020
Description: PROC for RGF

Name: RECRST60 Number of Lines: 4
Used by Program(s): PWSI060
Description: RESTART record for PWF

Name: RECSAF Number of Lines: 72
Used by Program(s): WAQC020 WAQC025 WAQC031 WAQC032 WAQC033 WAQC034 WAQC035 WAQC036 WAQC100 WAQC220
Description: Record description of Sample Analysis File (SAF)

Name: RECSAFHR Number of Lines: 11
Used by Program(s): WAQC037 WAQC038
Description: PROC for RGF

Name: RECSAFIL Number of Lines: 2
Used by Program(s): WAQC025
Description: Record layout for filler equal in length to SAF

Name: RECSAFO Number of Lines: 1
Used by Program(s): WAQC020
Description: Record description of Sample Analysis File as output

Name: RECSAFPR Number of Lines: 11
Used by Program(s): WAQC025
Description: PROC record for SAF

Name: RECSAHD Number of Lines: 8
Used by Program(s): WAQC100 WAQC110 WAQC111 WAQC112 WAQC113
Description: Record description of Report Header for Sample Analysis File (SAF)

Name: RECSAPRO Number of Lines: 6
Used by Program(s): WAQC020
Description: Record Description of PROC record for Sample Analysis File

Name: RECSARD Number of Lines: 48
Used by Program(s): WAQC100 WAQC110 WAQC111
Description: Record description of Chem/Radio Analysis Select File

Name: RECSARS Number of Lines: 54
Used by Program(s): WAQC100 WAQC112 WAQC113
Description: Record layout for Bact/Turbidity Analysis Report

Name: RECSCHED Number of Lines: 18
Used by Program(s): WAQC130 WAQC140 WAQC150 WAQC170 WAQC180
Description: record layout for SAF scheduling record

Name: RECSEF Number of Lines: 18
Used by Program(s): ENAC010 MSIS010 MSIS020 OPER010 PWSI010 PWSI070 REGS010 VAEX010 WAQC010 WAQC020 WAQC120 WAQC210
Description: Record description of Standard Error File (SEF)

Name: RECSEL1 Number of Lines: 6
Used by Program(s): MSIS040
Description: Record description of SEL1

Name RECSEL2 Number of Lines: 5
Used by Program(s): MSIS040
Description: Record description of SEL2

Name: RECSHF Number of Lines: 9
Used by Program(s): ENAC010 MSIS020 MSIS050 OPER010 VAEX010 WAQC120
Description: Record description of Standard Error File (SEF)

Name: RECSHFI Number of Lines: 9
Used by Program(s): MSIS020 MSIS040 MSIS050
Description: Record description of Standard History File (SHF) as input

Name RECSHFPR Number of Lines: 7
Used by Program(s): WAQC120 VAEX010 ENAC010
Description: Record description of Standard History transaction

Name: RECSHFT Number of Lines: 9
Used by Program(s): MSIS020 MSIS050
Description: Record description of Standard History transaction

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Name: RECSORT Number of Lines: 7
Used by Program(s): MSIS040
Description: Record description of SORT

Name: RECSRT30 Number of Lines: 7
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Record description of SORT for PWSI030

Name: RECSSPRI Number of Lines: 34
Used by Program(s): SRVY010 SRVY020
Description: Record layouts for SRVY priority report file

Name: RECSSSCH Number of Lines: 34
Used by Program(s): SRVY010 SRVY020
Description: Record layouts for SRVY schedule report file

Name: RECSTVIF Number of Lines: 3
Used by Program(s): WAQC040 WAQC041 WAQC050 WAQC051 WAQC060
WAQC061 WAQC070 WAQC080 WAQC090
Description: Record description of Violations File (VIF)
sort record

Name: RECVEF Number of Lines: 30
Used by Program(s): FEDR020 VAEX010 VAEX040
Description: Record description of Variances and Exemptions
File (VEF)

Name: RECVEFCA Number of Lines: 45
Used by Program(s): VAEX010 VAEX030
Description: Record description of Variances and Exemptions
Compliance In Arrears File

Name: RECVEFCS Number of Lines: 46
Used by Program(s): VAEX010 VAEX020
Description: Record description of Variances and Exemptions
Compliance schedules

Name: RECVEFRF Number of Lines: 47
Used by Program(s): VAEX010 VAEX040 VAEX041 VAEX050
Description: Record description of Variances and Exemptions
Report File

Name: RECVIF Number of Lines: 39
Used by Program(s): WAQC120 WAQC125 FEDR020 SRVY010
Description: Record description of Violations File (VIF)

Name: RECVIFIN Number of Lines: 31
Used by Program(s): WAQC040 WAQC041 WAQC050 WAQC051
Description: Record description of Violations Report File
as input

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Name: RECVIFIR     Number of Lines: 14
Used by Program(s): WAQC037 WAQC090
Description: Record description for Operations Violations
             Report File

Name: RECVIFIS     Number of Lines: 29
Used by Program(s): WAQC060 WAQC061 WAQC070 WAQC080
Description: Record description of Sampling Violations
             Report File

Name: RECVIHR      Number of Lines: 7
Used by Program(s): WAQC037 WAQC040 WAQC041 WAQC050 WAQC051
                    WAQC060 WAQC061 WAQC070 WAQC080 WAQC090
Description: Record description of Violations Report
             File Header

Name: RECVIST      Number of Lines: 8
Used by Program(s): WAQC040 WAQC041 WAQC050 WAQC051 WAQC060
                    WAQC061 WAQC070 WAQC080 WAQC090 WAQC110
                    WAQC111 WAQC112 WAQC113
Description: Record description of Violations File Sort record

Name: RECVIU00     Number of Lines: 5
Used by Program(s): WAQC037 WAQC120
Description: VIF update record layout for transactions 00 & 98

Name: RECVIU01     Number of Lines: 16
Used by Program(s): WAQC037 WAQC120
Description: VIF update record layout for transaction 01

Name: RECVIU02     Number of Lines: 18
Used by Program(s): WAQC037 WAQC120
Description: VIF Update record layout for transaction 02

Name: REGSOCOM     Number of Lines: 2
Used by Program(s): REGS010 WAQC032 WAQC033
Description: Object computer for segmented programs

Name: RTNALDEC     Number of Lines: 79
Used by Program(s): PWSI020 PWSI030 PWSI040 PWSI050 PWSI060
                    WAQC010 WAQC011 WAQC040 WAQC041 WAQC050
                    WAQC051 WAQC100 WAQC110 WAQC111 WAQC112
                    WAQC113 WAQC125
Description: Routine To position decimal point, used with
             WSALNDEC

Name: RTNALIGN     Number of Lines: 47
Used by Program(s): VAEX041 VAEX050 WAQC040 WAQC041 WAQC050
                    WAQC051 WAQC110 WAQC111 WAQC112 WAQC113
                    WAQC125
Description: Routine to align decimal point, used with WSALIGN
```

Name: RTNCNVT Number of Lines: 27
Used by Program(s): WAQC031 WAQC034 WAQC035 WAQC036
Description: Routine to convert an MCL and DECIMALS field
to a decimal number

Name: RTNDATED Number of Lines: 39
Used by Program(s): ENAC010 ENAC020 FEDR010 MSIS010 MSIS020
MSIS030 MSIS040 MSIS050 OPER010 OPER020
PWSI010 PWSI020 PWSI030 PWSI040 PWSI050
PWSI060 PWSI070 PWSI080 PWSI090 PWSI120
PWSI130 REGS010 REGS020 SRVY010 VAEX010
VAEX040 WAQC010 WAQC011 WAQC020 WAQC025
WAQC100 WAQC120 WAQC125 WAQC130 WAQC210
WAQC220
Description: Routine to validate dates, used with WSDATED

Name: RTNDECLR Number of Lines: 19
Used by Program(s): PWSI010 WAQC010 WAQC032 WAQC033 WAQC034
WAQC035 WAQC036 WAQC120
Description: Routine which sets uses of declaratives with
Lab Table

Name: RTNERROR Number of Lines: 110
Used by Program(s): MSIS010 MSIS020 MSIS030 MSIS050
Description: Routine to print processing option errors,
uses WSERROR

Name: RTNFMJUL Number of Lines: 63
Used by Program(s): ENAC030 ENAC040 MSIS020 MSIS040 MSIS050
OPER030 PWSI060 PWSI070 PWSI080 PWSI090
REGS020 SRVY020 VAEX010 VAEX020 VAEX030
VAEX040 VAEX041 VAEX050 WAQC010 WAQC011
WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
WAQC036 WAQC040 WAQC041 WAQC050 WAQC051
WAQC060 WAQC061 WAQC070 WAQC080 WAQC090
WAQC110 WAQC111 WAQC112 WAQC113 WAQC125
WAQC130
Description: Routine to convert Julian Date to Calendar
Date, uses WSJUL

Name: RTNHDR Number of Lines: 16
Used by Program(s): ENAC010 ENAC030 ENAC040 FEDR010 FEDR020
MSIS010 MSIS020 MSIS030 MSIS050 OPER010
OPER030 OPER040 PWSI010 PWSI030 PWSI040
PWSI050 PWSI060 PWSI070 PWSI090 PWSI120
PWSI130 REGS010 REGS020 SRVY010 SRVY020
VAEX010 VAEX020 VAEX030 VAEX041 VAEX050
WAQC010 WAQC011 WAQC020 WAQC025 WAQC032
WAQC033 WAQC034 WAQC035 WAQC036 WAQC040
WAQC041 WAQC050 WAQC051 WAQC060 WAQC061
WAQC070 WAQC080 WAQC090 WAQC110 WAQC111
WAQC112 WAQC113 WAQC120 WAQC125 WAQC130
WAQC140 WAQC150 WAQC170 WAQC180 WAQC200
WAQC210 WAQC220
Description: Routine to print first three header lines

Name: RTNLAG Number of Lines: 19
Used by Program(s): VAEX030 VAEX050
Description: Routine to calculate lag in dates, uses WSLAG

Name: RTNLBT Number of Lines: 245
Used by Program(s): PWSI010 WAQC010 WAQC032 WAQC033 WAQC034
WAQC036 WAQC120
Description: Routine to determine if a record is on the
Lab Table (LBT), uses WSLBT

Name: RTNPRINT Number of Lines: 136
Used by Program(s): ENAC010 ENAC030 FEDR010 OPER010 PWSI030
PWSI040 PWSI050 PWSI060 PWSI070 PWSI090
PWSI130 REGS010 REGS020 VAEX010 WAQC010
WAQC011 WAQC020 WAQC025 WAQC032 WAQC033
WAQC040 WAQC041 WAQC050 WAQC051 WAQC060
WAQC061 WAQC070 WAQC080 WAQC090 WAQC110
WAQC111 WAQC112 WAQC113 WAQC120 WAQC150
WAQC170 WAQC180 WAQC210 WAQC220
Description: Routines to print standard errors, uses
WSPRINT or WSPRT

Name: RTNPRT Number of Lines: 136
Used by Program(s): PWSI010
Description: Routine to print card images and error messages,
uses WSPRT

Name: RTNPWDEC Number of Lines: 19
Used by Program(s): ENAC010 ENAC030 OPER010 VAEX010 VAEX040
WAQC010 WAQC100 WAQC120 WAQC125
Description: Declarative Section for Public Water Table
(PWT) use

```
Name: RTNPWT       Number of Lines: 248
Used by Program(s): ENAC010 ENAC030 OPER010 VAEX010 VAEX040
                    WAQC010 WAQC100 WAQC120 WAQC125
Description: Routine to determine if an entry is on the
             Public Water Table (PWT) uses WSPWT.

Name: RTNSELRP     Number of Lines: 303
Used by Program(s): ENAC020 MSIS040 OPER020 PWSI020 PWSI080
                    VAEX040 WAQC100 WAQC125
Description: Routine to produce selection statistics
             report, uses WSSELRP

Name: RTNSLASH     Number of Lines: 11
Used by Program(s): ENAC030 ENAC040 FEDR020 OPER030 OPER040
                    SRVY020 VAEX020 VAEX030 VAEX041 VAEX050
                    WAQC034 WAQC038 WAQC040 WAQC041 WAQC050
                    WAQC051 WAQC060 WAQC061 WAQC070 WAQC080
                    WAQC090 WAQC110 WAQC111 WAQC112 WAQC113
                    WAQC130 WAQC140 WAQC150 WAQC170 WAQC180
                    WAQC200
Description: Routine to add slashes to formatted date,
             uses WSSLASH.

Name: RTNSORT      Number of Lines: 60
Used by Program(s): VAEX020 VAEX030 VAEX041 VAEX050 ENAC010
Description: Routine to sort values of an input vector

Name: RTNSRT       Number of Lines: 63
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060 PWSI070
                    SRVY010 WAQC011 WAQC040 WAQC041 WAQC050
                    WAQC051 WAQC060 WAQC061 WAQC070 WAQC080
                    WAQC090 WAQC110 WAQC111 WAQC112 WAQC113
Description: Routine To produce Sort sequence report,
             uses WSSRT

Name: RTNSTAT      Number of Lines: 83
Used by Program(s): ENAC010 MSIS020 MSIS030 MSIS050 OPER010
                    PWSI070 REGS010 VAEX010 WAQC010 WAQC020
                    WAQC120
Description: Routine to print Standard Update Statistics

Name: RTNTOJUL     Number of Lines: 33
Used by Program(s): ENAC010 ENAC020 FEDR010 MSIS040 MSIS050
                    OPER010 OPER020 PWSI010 PWSI020 PWSI080
                    PWSI090 REGS010 SRVY010 VAEX010 VAEX040
                    VAEX041 WAQC010 WAQC031 WAQC032 WAQC033
                    WAQC034 WAQC035 WAQC036 WAQC037 WAQC100
                    WAQC120 WAQC125 WAQC130 WAQC210 WAQC220
Description: Routine to convert a calandar date to Julian format
```

```
Name: RTNWARN      Number of Lines: 46
Used by Program(s): WAQC120 VAEX010 ENAC010
Description: Routine to print standard Warning Report,
             uses WSWARN

Name: SCOM         Number of Lines:  1
Used by Program(s): ENAC010 ENAC020 ENAC030 ENAC040 FEDR010
                    FEDR020 MSIS010 MSIS020 MSIS030 MSIS040
                    MSIS050 OPER010 OPER020 OPER030 OPER040
                    OPER050 PWSI010 PWSI020 PWSI030 PWSI040
                    PWSI050 PWSI060 PWSI070 PWSI080 PWSI090
                    PWSI120 PWSI130 REGS010 REGS020 SRVY010
                    SRVY020 VAEX010 VAEX020 VAEX030 VAEX040
                    VAEX041 VAEX050 WAQC010 WAQC011 WAQC020
                    WAQC025 WAQC031 WAQC032 WAQC033 WAQC034
                    WAQC035 WAQC036 WAQC037 WAQC038 WAQC040
                    WAQC041 WAQC050 WAQC051 WAQC060 WAQC061
                    WAQC070 WAQC080 WAQC090 WAQC100 WAQC110
                    WAQC111 WAQC112 WAQC113 WAQC120 WAQC125
                    WAQC130 WAQC140 WAQC150 WAQC170 WAQC180
                    WAQC200 WAQC210 WAQC220
Description: Source Computer statement

Name: SDPSF        Number of Lines: 1
Used by Program(s): WAQC010
Description: Sort Description of Periodic Sample File (PSF)

Name: SDSAFI       Number of Lines: 1
Used by Program(s): WAQC110 WAQC111 WAQC112 WAQC113
Description: SD for SAF

Name: SDVIF Number of Lines:  1
Used by Program(s): WAQC125
Description:  SD for VIF records

Name: SDVIFI       Number of Lines: 1
Used by Program(s): WAQC040 WAQC041 WAQC050 WAQC051 WAQC060
                    WAQC061 WAQC070 WAQC080 WAQC090
Description: Sort description of Violations File (VIF)

Name: SDWKF30      Number of Lines: 1
Used by Program(s): PWSI030
Description:  Sort Work record

Name: SDWKF40      Number of Lines: 1
Used by Program(s): PWSI040
Description:  Sort work record

Name: SDWKF50      Number of Lines: 1
Used by Program(s): PWSI050
Description:  Sort work record
```

Name: SD144 Number of Lines: 1
Used by Program(s): PWSI070 PWSI080
Description:

Name: SELEA010 Number of Lines: 15
Used by Program(s): ENAC010
Description: SELECT and ASSIGN statements for ENAC010

Name: SELEA020 Number of Lines: 5
Used by Program(s): ENAC020
Description: SELECT and ASSIGN statements for ENAC020

Name: SELEA030 Number of Lines: 8
Used by Program(s): ENAC030
Description: SELECT and ASSIGN statements for ENAC030

Name: SELEA040 Number of Lines: 2
Used by Program(s): ENAC040
Description: SELECT and ASSIGN statements for ENAC040

Name: SELFR010 Number of Lines: 6
Used by Program(s): FEDR010
Description: SELECT and ASSIGN statments for FEDR010

Name: SELFR020 Number of Lines: 6
Used by Program(s): FEDR020
Description: SELECT and ASSIGN statements for FEDR020

Name: SELMS010 Number of Lines: 15
Used by Program(s): MSIS010
Description: SELECT and ASSIGN statements for MSIS010

Name: SELMS020 Number of Lines: 9
Used by Program(s): MSIS020
Description: SELECT and ASSIGN statements for MSIS020

Name: SELMS030 Number of LInes: 22
Used by Program(s): MSIS030
Description: SELECT and ASSIGN statements for MSIS030

Name: SELMS040 Number of Lines: 11
Used by Program(s): MSIS040
Description: SELECT and ASSIGN statements for MSIS040

Name: SELMS050 Number of Lines: 9
Used by Program(s): MSIS050
Description: SELECT and ASSIGN statements for MSIS050

Name: SELOM010 Number of Lines: 15
Used by Program(s): OPER010
Description: SELECT and ASSIGN statements for OPER010

Name: SELOM020 Number of Lines: 7
Used by Program(s): OPER020
Description: SELECT and ASSIGN statements for OPER020

Name: SELOM030 Number of Lines: 2
Used by Program(s): OPER030
Description: SELECT and ASSIGN statements for OPER030

Name: SELOM040 Number of Lines: 2
Used by Program(s): OPER040
Description: SELECT and ASSIGN statements for OPER040

Name: SELCOM050 Number of Lines: 2
Used by Program(s): OPER050
Description: SELECT and ASSIGN statements for OPER050

Name: SELPW010 Number of Lines: 37
Used by Program(s): PWSI010
Description: SELECT and ASSIGN statements for PWSI010

Name: SELPW020 Number of Lines: 9
Used by Program(s): PWSI020
Description: SELECT and ASSIGN statements for PWSI020

Name: SELPW060 Number of Lines: 6
Used by Program(s): PWSI060
Description: SELECT and ASSIGN statements for PWSI060

Name: SELPW070 Number of Lines: 9
Used by Program(s): PWSI070
Description: SELECT and ASSIGN statements for PWSI070

Name: SELPW080 Number of Lines: 7
Used by Program(s): PWSI080
Description: SELECT and ASSIGN statements for PWSI080

Name: SELPW090 Number of Lines: 5
Used by Program(s): PWSI090
Description: SELECT and ASSIGN statements for PWSI090

Name: SELPW120 Number of Lines: 5
Used by Program(s): PWSI120
Description: SELECT and Assign statements for PWSI120

Name: SELPW130 Number of Lines: 6
Used by Program(s): PWSI130
Description: SELECT and ASSIGN statements for PWSI130

Name: SELPW345 Number of Lines: 5
Used by Program(s): PWSI030 PWSI040 PWSI050
Description: SELECT and ASSIGN statements for PWSI030, 40 50

Name: SELRG010 Number of Lines: 25
Used by Program(s): REGS010
Description: SELECT and ASSIGN statements for REGS010

Name: SELRG020 Number of Lines: 3
Used by Program(s): REGS020
Description: SELECT and ASSIGN statements for REGS020

Name: SELVE010 Number of Lines: 27
Used by Program(s): VAEX010
Description: SELECT and ASSIGN statements for VAEX010

Name: SELVE020 Number of Lines: 2
Used by Program(s): VAEX020
Description: SELECT and ASSIGN statements for VAEX020

Name: SELVE030 Number of Lines: 2
Used by Program(s): VAEX030
Description: SELECT and ASSIGN statements for VAEX020

Name: SELVE040 Number of Lines: 9
Used by Program(s): VAEX040
Description: SELECT and ASSIGN statements for VAEX040

Name: SELVE041 Number of Lines: 2
Used by Program(s): VAEX041
Description: SELECT and ASSIGN statements for VAEX041

Name: SELVE050 Number of Lines: 2
Used by Program(s): VAEX050
Description: SELECT and ASSIGN statements for VAEX050

Name: SELWQ010 Number of Lines: 54
Used by Program(s): WAQC010
Description: SELECT and ASSIGN statements for WAQC010

Name: SELWQ020 Number of Lines: 6
Used by Program(s): WAQC020
Description: SELECT and ASSIGN statements for WAQC020

Name: SELWQ025 Number of Lines: 10
Used by Program(s): WAQC025
Description: SELECT and ASSIGN statements for WAQC025

Name: SELWQ031 Number of Lines: 36
Used by Program(s): WAQC031
Description: SELECT and ASSIGN statements for WAQC031

Name: SELWQ032 Number of Lines: 46
Used by Program(s): WAQC032
Description: SELECT and ASSIGN statements for WAQC032

Name: SELWQ033 Number of Lines: 48
Used by Program(s): WAQC033 WAQC035 WAQC036
Description: SELECT and ASSIGN statements for WAQC033

Name: SELWQ034 Number of Lines: 42
Used by Program(s): WAQC034
Description: SELECT and ASSIGN statements for WAQC034

Name: SELWQ035 Number of Lines: 40
Used by Program(s): WAQC035
Description: SELECT and ASSIGN statements for WAQC035

Name: SELWQ036 Number of Lines: 40
Used by Program(s): WAQC036
Description: SELECT and ASSIGN statements for WAQC036

Name: SELWQ037 Number of Lines: 4
Used by Program(s): WAQC037
Description: SELECT and ASSIGN statements for WAQC037

Name: SELWQ038 Number of Lines: 21
Used by Program(s): WAQC038
Description: SELECT and ASSIGN statements for WAQC038

Name: SELWQ040 Number of Lines: 5
Used by Program(s): WAQC040
Description: SELECT and ASSIGN statements for WAQC040

Name: SELWQ041 Number of Lines: 5
Used by Program(s): WAQC041
Description: SELECT and ASSIGN statements for WAQC041

Name: SELWQ050 Number of Lines: 5
Used by Program(s): WAQC050
Description: SELECT and ASSIGN statements for WAQC050

Name: SELWQ051 Number of Lines: 5
Used by Program(s): WAQC051
Description: SELECT and ASSIGN statements for WAQC051

Name: SELWQ060 Number of Lines: 5
Used by Program(s): WAQC060
Description: SELECT and ASSIGN statements for WAQC060

Name: SELWQ061 Number of Lines: 5
Used by Program(s): WAQC061
Description: SELECT and ASSIGN statements for WAQC061

Name: SELWQ070 Number of Lines: 5
Used by Program(s): WAQC070
Description: SELECT and ASSIGN statements for WAQC070

Name: SELWQ080 Number of Lines: 5
Used by Program(s): WAQC080
Description: SELECT and ASSIGN statements for WAQC080

Name: SELWQ090 Number of Lines: 5
Used by Program(s): WAQC090
Description: SELECT and ASSIGN statements for WAQC090

Name: SELWQ110 Number of Lines: 5
Used by Program(s): WAQC110
Description: SELECT and ASSIGN statments for WAQC110

Name: SELWQ111 Number of Lines: 5
Used by Program(s): WAQC111
Description: SELECT and ASSIGN statements for WAQC111

Name: SELWQ112 Number of Lines: 5
Used by Program(s): WAQC112
Description: SELECT and ASSIGN statements for WAQC112

Name: SELWQ113 Number of Lines: 5
Used by Program(s): WAQC113
Description: SELECT and ASSIGN statements for WAQC113

Name: SELWQ120 Number of Lines: 17
Used by Program(s): WAQC120
Description: SELECT and ASSIGN statements for WAQC120

Name: SELWQ125 Number of Lines: 8
Used by Program(s): WAQC125
Description: SELECT and ASSIGN statements for WAQC125

Name: SELWQ130 Number of Lines: 10
Used by Program(s): WAQC130
Description: SELECT and ASSIGN statements for WAQC 130

Name: SELWQ140 Number of Lines: 2
Used by Program(s): WAQC140
Description: SELECT and ASSIGN statements for WAQC140

Name: SELWQ150 Number of Lines: 3
Used by Program(s): WAQC150
Description: SELECT and ASSIGN statements for WAQC150

Name: SELWQ170 Number of Lines: 3
Used by Program(s): WAQC170
Description: SELECT and ASSIGN statements for WAQC170

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Name: SELWQ180     Number of Lines: 3
Used by Program(s): WAQC180
Description: SELECT and ASSIGN statements for WAQC180

Name: SELWQ200     Number of Lines: 3
Used by Program(s): WAQC200
Description: SELECT and ASSIGN statments for WAQC200

Name: SELWQ210     Number of Lines: 17
Used by Program(s): WAQC210
Description: SELECT and ASSIGN statments for WAQC210

Name: SELWQ220     Number of Lines: 5
Used by Program(s): WAQC220
Description: SELECT and ASSIGN statements for WAQC220

Name: SPNM         Number of Lines: 1
Used by Program(s): ENAC010 ENAC020 ENAC030 ENAC040 FEDR010
                    FEDR020 MSIS010 MSIS020 MSIS030 MSIS040
                    MSIS050 OPER010 OPER020 OPER030 OPER040
                    OPER050 PWSI010 PWSI020 PWSI030 PWSI040
                    PWSI050 PWSI060 PWSI070 PWSI080 PWSI090
                    PWSI120 PWSI130 REGS010 REGS020 SRVY010
                    SRVY020 VAEX010 VAEX020 VAEX030 VAEX040
                    VAEX041 VAEX050 WAQC010 WAQC011 WAQC020
                    WAQC025 WAQC031 WAQC032 WAQC033 WAQC034
                    WAQC035 WAQC036 WAQC037 WAQC038 WAQC040
                    WAQC041 WAQC050 WAQC051 WAQC060 WAQC061
                    WAQC070 WAQC080 WAQC090 WAQC100 WAQC110
                    WAQC111 WAQC112 WAQC113 WAQC120 WAQC125
                    WAQC130 WAQC140 WAQC150 WAQC170 WAQC180
                    WAQC200 WAQC210 WAQC220
Description: SPECIAL-NAMES statement

Name: WSALIGN      Number of Lines: 17
Used by Program(s): VAEX041 VAEX050 WAQC011 WAQC035 WAQC036
                    WAQC040 WAQC041 WAQC050 WAQC051 WAQC060
                    WAQC061 WAQC070 WAQC080 WAQC090 WAQC110
                    WAQC111 WAQC112 WAQC113 WAQC125
Description: Working storage for RTNALIGN

Name: WSALNDEC     Number of Lines: 28
Used by Program(s): PWSI020 PWSI030 PWSI040 PWSI050 PWSI060
                    WAQC010 WAQC011 WAQC040 WAQC041 WAQC050
                    WAQC051 WAQC100 WAQC110 WAQC111 WAQC112
                    WAQC113 WAQC125
Description: Working storage for RTNALDEC
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```
Name: WSBINRY      Number of Lines: 5
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Working storage for binary digit redefined
             alphanumeric

Name:  WSCNVRT     Number of Lines: 5
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description:  Working storage for converting to binary

Name:  WSCNVT      Number of Lines: 5
Used by Program(s): WAQC031 WAQC034 WAQC035 WAQC036
Description:  Working storage for converting to binary

Name: WSCTR30      Number of Lines: 23
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Working storage for sort counters

Name: WSCVTPWS     Number of Lines: 83
Used by Program(s): PWSI010
Description: Working storage for PWSI CVT

Name:  WSDATED     Number of Lines: 35
Used by Program(s): ENAC010 ENAC020 FEDR010 MSIS010 MSIS020
                    MSIS030 MSIS040 MSIS050 OPER010 OPER020
                    PWSI010 PWSI020 PWSI030 PWSI040 PWSI050
                    PWSI060 PWSI070 PWSI080 PWSI090 PWSI120
                    PWSI130 REGS010 REGS020 SRVY010 VAEX010
                    VAEX040 WAQC010 WAQC011 WAQC020 WAQC025
                    WAQC035 WAQC036 WAQC100 WAQC120 WAQC125
                    WAQC130 WAQC210 WAQC220
Description:  Working storage for RTNDATED

Name:  WSDETAR     Number of Lines: 5
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description:  Working storage for DET array

Name:  WSERROR     Number of Lines: 39
Used by Program(s): MSIS010 MSIS020 MSIS030 MSIS050
Description:  Working storage for RTNERROR

Name: WSERRREC     Number of Lines: 13
Used by Program(s): ENAC020 MSIS040 OPER020 PWSI010 PWSI020
                    PWSI030 PWSI040 PWSI050 PWSI060 PWSI080
                    SRVY010 VAEX040 WAQC100 WAQC125
Description: Working storage for error message lines
```

Name: WSFLTTL Number of Lines: 32
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Working Storage for Public Water System report titles

Name: WSHDARY Number of Lines: 5
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Working storage for 16 position array

Name: WSHDR Number of Lines: 39
Used by Program(s): ENAC010 ENAC020 ENAC030 ENAC040 FEDR010
FEDR020 MSIS010 MSIS020 MSIS030 MSIS040
MSIS050 OPER010 OPER020 OPER030 OPER040
PWSI010 PWSI020 PWSI030 PWSI040 PWSI050
PWSI060 PWSI070 PWSI080 PWSI090 PWSI120
PWSI130 REGS010 REGS020 SRVY010 SRVY020
VAEX010 VAEX020 VAEX030 VAEX040 VAEX041
VAEX050 WAQC010 WAQC011 WAQC020 WAQC025
WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
WAQC036 WAQC040 WAQC041 WAQC050 WAQC051
WAQC060 WAQC061 WAQC070 WAQC080 WAQC090
WAQC100 WAQC110 WAQC111 WAQC112 WAQC113
WAQC120 WAQC125 WAQC130 WAQC140 WAQC150
WAQC170 WAQC180 WAQC200 WAQC210 WAQC220
Description: Working Storage for RTNHDR

Name: WSHDRVAL Number of Lines: 49
Used by Program(s): ENAC020 MSIS040 OPER020 PWSI020 PWSI080
VAEX040 WAQC100 WAQC125
Description: Working Storage for RTNSELRP

Name: WSJUL Number of Lines: 105
Used by Program(s): ENAC010 ENAC020 ENAC030 ENAC040 FEDR010
MSIS020 MSIS040 MSIS050 OPER010 OPER020
OPER030 PWSI010 PWSI020 PWSI060 PWSI070
PWSI080 PWSI090 PWSI120 REGS010 REGS020
SRVY010 SRVY020 VAEX010 VAEX020 VAEX030
VAEX040 VAEX041 VAEX050 WAQC010 WAQC011
WAQC031 WAQC032 WAQC033 WAQC034 WAQC035
WAQC036 WAQC037 WAQC040 WAQC041 WAQC050
WAQC051 WAQC060 WAQC061 WAQC070 WAQC080
WAQC090 WAQC100 WAQC110 WAQC111 WAQC112
WAQC113 WAQC120 WAQC125 WAQC130 WAQC210
WAQC220
Description: Working Storage for TRNFRJUL and RTNTOJUL

Name: WSLAG Number of Lines: 13
Used by Program(s): VAEX030 VAEX050
Description: Working Storage for TRNLAG

```
Name: WSLBT          Number of Lines: 48
Used by Program(s): PWSI010 WAQC010 WAQC032 WAQC033 WAQC034
                    WAQC035 WAQC036 WAQC120
Description: Working Storage for RTNLBT

Name: WSPHONE        Number of Lines: 4
Used by Program(s): OPER030 OPER040
Description: Working Storage for splitting phone number

Name: WSPRCERR       Number of Lines: 13
Used by Program(s): ENAC010 ENAC020 FEDR010 MSIS040 OPER010
                    OPER020 PWSI010 PWSI020 PWSI030 PWSI040
                    PWSI050 PWSI060 PWSI070 PWSI080 PWSI090
                    PWSI120 PWSI130 REGS020 SRVY010 VAEX010
                    VAEX040 WAQC011 WAQC020 WAQC025 WAQC100
                    WAQC120  WAQC125 WAQC130
Description: Working Storage for PROC error messages

Name: WSPRINT        Number of Lines: 56
Used by Program(s): ENAC030 FEDR010 OPER010 PWSI030 PWSI040
                    PWSI050 PWSI060 PWSI070 PWSI090 PWSI130
                    VAEX040 WAQC020 WAQC025 WAQC036 WAQC040
                    WAQC041 WAQC050 WAQC051 WAQC060 WAQC061
                    WAQC070 WAQC080 WAQC090 WAQC120 WAQC150
                    WAQC170 WAQC180 WAQC220
Description: Working Storage for RTNPRINT

Name:  WSPRT         Number of Lines: 59
Used by Program(s): ENAC010 PWSI010 REGS010 REGS020 VAEX010
                    WAQC010 WAQC011 WAQC032 WAQC033 WAQC034
                    WAQC100 WAQC111 WAQC112 WAQC113 WAQC125
                    WAQC210
Description:  Working Storage for RTNPRT

Name: WSPWFAR        Number of Lines: 135
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Working Storage for Public Water File mnemonic

Name: WSPWFWK        Number of Lines: 5
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Working Storage for PWF-type file

Name: WSPWT          Number of Lines: 46
Used by Program(s): ENAC010 ENAC030 OPER010 VAEX010 VAEX030
                    WAQC010 WAQC100 WAQC120 WAQC125
Description: Working Storage for RTNPWT

Name: WSRECDET       Number of Lines: 16
Used by Program(s): ENAC020 MSIS020 MSIS040 MSIS050 OPER020
                    PWSI070 PWSI080 SRVY010 VAEX040
Description: Working Storage for Data Element Table (DET)
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Name: WSRSTERR     Number of Lines: 7
Used by Program(s): WAQC150 WAQC170 WAQC180
Description: Working Storage for RESTART error messages

Name: WSSELERR     Number of Lines: 37
Used by Program(s): ENAC020 MSIS040 OPER020 PWSI020 PWSI080
                    VAEX040 WAQC100 WAQC125
Description: Working Storage for SEL1 and SEL2 error messages

Name: WSSELRP      Number of Lines: 166
Used by Program(s): ENAC020 MSIS040 OPER020 PWSI020 PWSI080
                    VAEX040 WAQC100 WAQC125
Description: Working Storage for RTNSELRP

Name: WSSELTAB     Number of Lines: 49
used by Program(s): ENAC020 MSIS040 OPER020 PWSI020 PWSI080
                    VAEX040 WAQC100 WAQC125
Description: Working Storage for tables of Selection programs

Name: WSSKYBS      Number of Lines: 5
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Working Storage for sorting vector

Name: WSSLASH      Number of Lines: 14
Used by Program(s): ENAC030 ENAC040 FEDR020 OPER030 OPER040
                    SRVY020 VAEX020 VAEX030 VAEX041 VAEX050
                    WAQC011 WAQC034 WAQC038 WAQC040 WAQC041
                    WAQC050 WAQC051 WAQC060 WAQC061 WAQC070
                    WAQC080 WAQC090 WAQC110 WAQC111 WAQC112
                    WAQC113 WAQC130 WAQC140 WAQC150 WAQC170
                    WAQC180 WAQC200
Description: Working Storage for RTNSLASH

Name: WSSORT       Number of Lines: 16
Used by Program(s): VAEX020 VAEX030 VAEX041 VAEX050 ENAC010
Description: Working Storage for RTNSORT subscripts

Name: WSSRT        Number of Lines: 46
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060 PWSI070
                    SRVY010 WAQC011 WAQC040 WAQC041 WAQC050
                    WAQC051 WAQC060 WAQC061 WAQC070 WAQC080
                    WAQC090 WAQC110 WAQC111 WAQC112 WAQC113
Description: Working Storage for RTNSRT

Name: WSSRTERR     Number of Lines: 22
Used by Program(s): ENAC020 MSIS040 OPER020 PWSI030 PWSI040
                    PWSI050 PWSI060 PWSI070 PWSI080 SRVY010
                    VAEX040 WAQC011 WAQC040 WAQC041 WAQC050
                    WAQC051 WAQC060 WAQC061 WAQC070 WAQC080
                    WAQC090 WAQC110 WAQC111 WAQC112 WAQC113
Description: Working Storage for SORT error messages
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Name: WSSRTKY Number of Lines: 10
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Working Storage for sort key data from SORT records

Name: WSSS030 Number of Lines: 13
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Working Storage for PWFI reports

Name: WSSW030 Number of Lines: 23
Used by Program(s): PWSI030 PWSI040 PWSI050
Description: Working Storage for switches in PWFI reports

Name: WSSW060 Number of Lines: 33
Used by Program(s): PWSI060
Description: Working Storage for switches in Comprehensive List

Name: WSTRKCAP Number of Lines: 5
Used by Program(s): WAQC210
Description: Working Storage for Lab Table track capacity

Name: WSTRKPWT Number of Lines: 3
Used by Program(s): PWSI130
Description: Working Storage for PWT track capacity

Name: WSWARN Number of Lines: 62
Used by Program(s): WAQC120 VAEX010 ENAC010
Description: Working Storage for RTNWARN

Name: WS9TOX Number of Lines: 4
Used by Program(s): PWSI030 PWSI040 PWSI050 PWSI060
Description: Intermediate hold area in working storage

Subsystem Descriptions

Public Water System Inventory Subsystem (PWSI)

1. General Description

The Public Water System Inventory Subsystem (PWSI) is central to and a mandatory subsystem of the Model State Information System (MSIS). This subsystem maintains descriptive data about Public Water Systems (PWS's) on a Public Water File (PWF). This file is also used by other subsystems. The principal function of the PWSI Subsystem is to create and maintain this file and to display its contents upon request.

The PWF is used in the following subsystems:

a. Water Quality Compliance Subsystem (WAQC) uses the PWF to identify state defined regulation criteria for each specific PWS.

b. Federal Reporting Subsystem (FEDR) uses the PWF to report on the individual PWS's which were modified in a specific reporting period.

c. Sanitary Survey Subsystem (SRVY) uses the PWF to selectively weigh and list PWS's for survey purposes according to specific criteria.

In addition, some basic descriptive data is maintained in a direct access file, the Public Water Table (PWT), that is used as a verification aid and as a source of Public Water File data by the following subsystems: Enforcement Actions Subsystem, Variances and Exemptions Subsystem, and Operator and Mailing Subsystem. This table is built from the PWF.

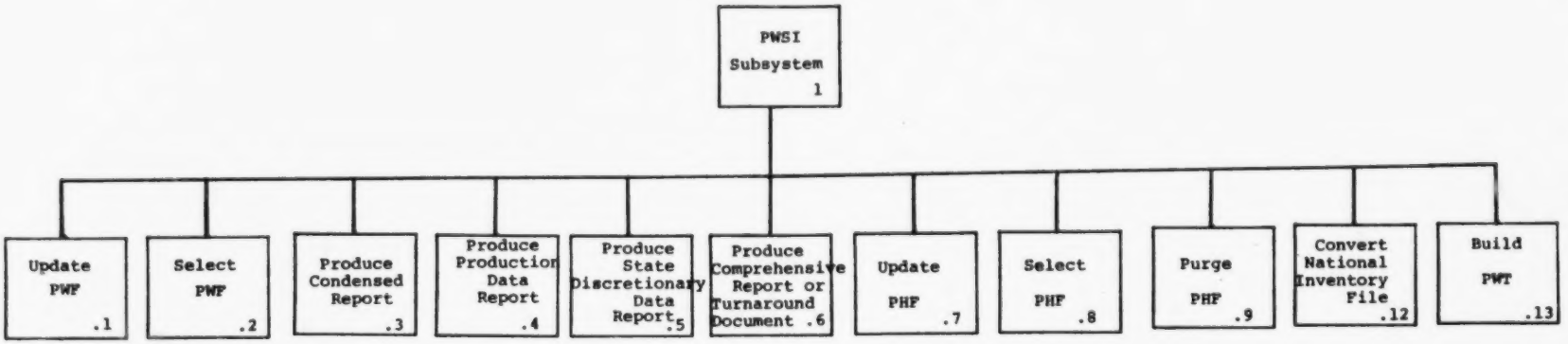
2. PWSI Visual Table of Contents

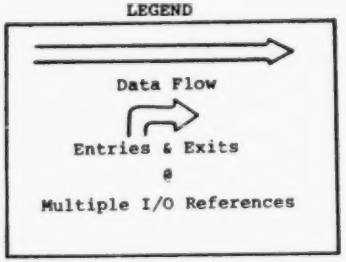
Subsystem: Public Water System Inventory

Description: Public Water System Inventory Subsystem
Visual Table of Contents

Diagram Type: VTOC 05

Diagram No: 1





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1.1 Update Public Water File (PWF)
1.2 Select Public Water File (PWF)
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1.9 Purge Public History File (PHF)
1.10 This module is no longer used
1.11 This module is no longer used
1.12 Convert National Inventory File
1.13 Build Public Water Table (PWT)

3. PWSI Subsystem Overview

The overall design of the PWSI includes the following functions:

- conversion of the PWF from the National Inventory File
- data entry and updating
- selection of data for reporting from the Public Water File and Public History File
- condensed reporting
- state discretionary data reporting
- Public Water System production data reporting
- comprehensive reporting
- history file maintenance, purge and reporting
- initial creation of the PWF from the national PWS Inventory File
- creation of the PWT

The main features of the PWSI Subsystem are

- Inputs do not depend on automation of other optional subsystems
- A sequential file and a direct-access table
- Variable length record for each PWS dependent on the number of water sources
- Flexible reporting modules that allow the user to specify selection criteria and sort sequence, but within predetermined print formats
- Suitable for annual reporting to EPA

Inputs to the subsystem consist of source documents that are transcribed on special input forms and then keypunched. The regular process is to read the input transactions and edit and verify all verifiable data. Transactions without errors are used to update the PWF, and those in error appear on an error list produced to facilitate correction of errors. Periodically and upon request, the PWF can be used to list an inventory of Public Water Systems and other information for use by state officials.

The inputs to PWSI Subsystem emanate from such sources as:

- EPA National PWS Inventory File (an initial conversion process)
- Sanitary surveys scheduled or performed
- Permits for new PWS's
- Updates received from PWS operators
- Updates received from VAEX, if subsystem is used
- Updates received from WAQC

Except for data from the EPA National PWS Inventory File, all inputs must be transcribed on a single input form that may be used for all these transactions (See Exhibit PWSI.400-401).

Exhibit PWSI.400-401 contains the format for PWS status and entry. This form serves two purposes:

- As an input form for the creation of a new PWS record
- As a turnaround document on which a PWS status is printed and which can be used to make changes and corrections to the record.

NARRATIVE

SUBSYSTEM: Public Water System Inventory
PROGRAM NAME: PWSI010
DATE: 2-9-77

I. OBJECTIVES:

The primary objective of the Data Entry and Update program (PWSI010) is to update the Public Water File (PWF). Adding a new Public Water System (PWS), updating an existing PWS, and the deletion of a PWS are all functions of the update. Four intermediate files can be produced from results of the update. A Public History File (PHF) update transaction is built for each valid update to the PWF. The PWF Update Statistics Report is produced to complete the update process.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Code Value Table	CVT-RECORD		MSIS.206
2.	Public Water File	PWF-RECORD		PWSI.200
3.	Laboratory Table	LBT-HDR-RECORD		WAQC.256
		LBT-RECORD		WAQC.250
4.	PWF-TRANSACTION-FILE	PWFI-TRAN-0	PWSI.400	PWSI.213
		PWFI-TRAN-1	PWSI.400	PWSI.214
		PWFI-TRAN-2	PWSI.400	PWSI.215
		PWFI-TRAN-3	PWSI.400	PWSI.216
		PWFI-TRAN-4	PWSI.400	PWSI.217
		PWFI-TRAN-5	PWSI.400	PWSI.218
		PWFI-TRAN-6	PWSI.400	PWSI.219
		PWFI-TRAN-7	PWSI.400	PWSI.220
		PWFI-TRAN-8	PWSI.400	PWSI.221
		PWFI-TRAN-9	PWSI.400	PWSI.222
		PWFI-TRAN-10	PWSI.400	PWSI.223
		PWFI-TRAN-11	PWSI.400	PWSI.224
		PWFI-TRAN-12	PWSI.401	PWSI.225
		PWFI-TRAN-13	PWSI.401	PWSI.226
		PWFI-TRAN-14	PWSI.401	PWSI.227
		PWFI-TRAN-15	PWSI.401	PWSI.228
		PWFI-TRAN-16	PWSI.401	PWSI.229
		PWFI-TRAN-17	PWSI.401	PWSI.233
		PWFI-TRAN-98	PWSI.114	PWSI.213
		PWFI-TRAN-99	PWSI.114	PWSI.213

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options	PWFI-PROC-RECORD	PWSI.111	PWSI.211

III. OUTPUTS:

A. Record Layout:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public Water File	PWF-RECORD	PWSI.200
2.	Public History File	PHF-RECORD	PWSI.202
3.	Standard Error File	MSI-PROC-SEF-RECORD SEF-RECORD	MSIS.208 MSIS.207
4.	New PWF File PROC	PWFI-PROC-RECORD	PWSI.204
5.	New PWS File	PWF-RECORD	PWSI.200
6.	Incomplete PWS File PROC	PWFI-PROC-RECORD	PWSI.204
7.	Incomplete PWS File	PWF-RECORD	PWSI.200
8.	PWF Status File PROC	PWFI-PROC-RECORD	PWSI.204
9.	PWS Status File	PWF-RECORD	PWSI.200
10.	Unsuccessful Update File PROC	PWFI-PROC-RECORD	PWSI.204
11.	Unsuccessful Update File	PWF-RECORD	PWSI.200

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	PWF Update Statistics Report	PWSI.312 MSIS.309
2.	Standard Warning Report	MSIS.310

C. Turnaround Documents:

Not Applicable

V. FUNCTIONS:

1. The Processing Options for this program are edited for card-ID, current date, report option request, and Standard Error File (SEF) options. The header record is built for all intermediate files, and for the SEF. All Processing Options in error are written to the Public Water File (PWF) Update Statistics Report.

2. An internal Code Value Table (CVT) is built, which is used to edit the values of data elements that update the PWF. These edit values are contained in two external CVT files.

3. The PWF input transactions (pre-sorted externally by PWS-ID, transaction code, and the two-position occurrence number) are read and edited for valid data element values. Transactions in error are written to the SEF.

4. The acceptable input transactions are used to create a new Public Water System (PWS) or update an existing one. The new PWF record is verified to see that all MSIS required fields are present, and all EPA requested fields are present. The new complete PWF record is also written to the New PWS File for subsequent report generation. New incomplete PWF records that cannot be used to update the PWF are written to the Incomplete PWS File. Transactions to request status or to delete an existing PWS are also processed. Any existing PWF record associated with one or more PWF input transactions from which an SEF record was generated, is written to the unsuccessful PWS File. This is pending if this option was selected on the Processing Options record and after all PWF input transactions for this PWS have been applied. The Public History File (PHF) records are built for subsequent updating of the PHF. If the record passes all verifications, it is written to the updated PWF.

5. The PWF Update Statistics Report is produced showing the results of the update.

VI. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

2. PWF Input Transactions

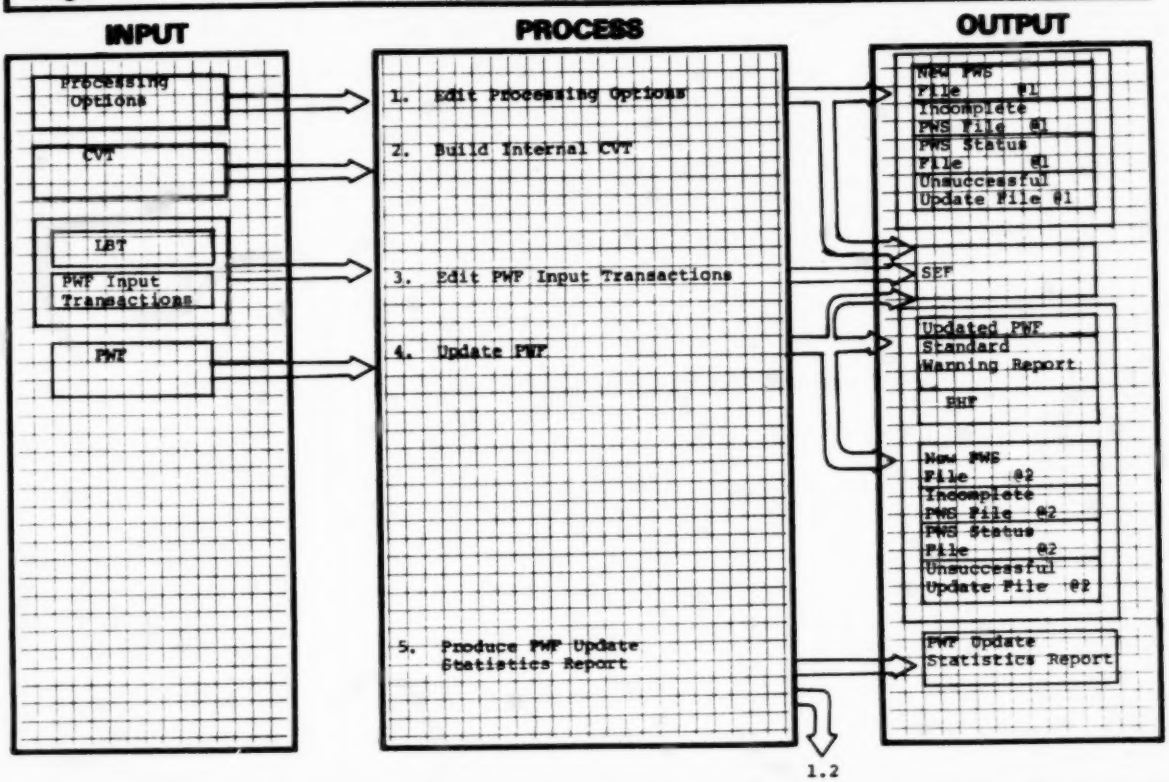
B. Data Element Descriptions:

1. Public Water File (PWF)

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv **Date:** 3-2-77 **Page:** 1 **of** 1

Diagram No.: 1.1 **Description:** Update PWF (PWSI010)

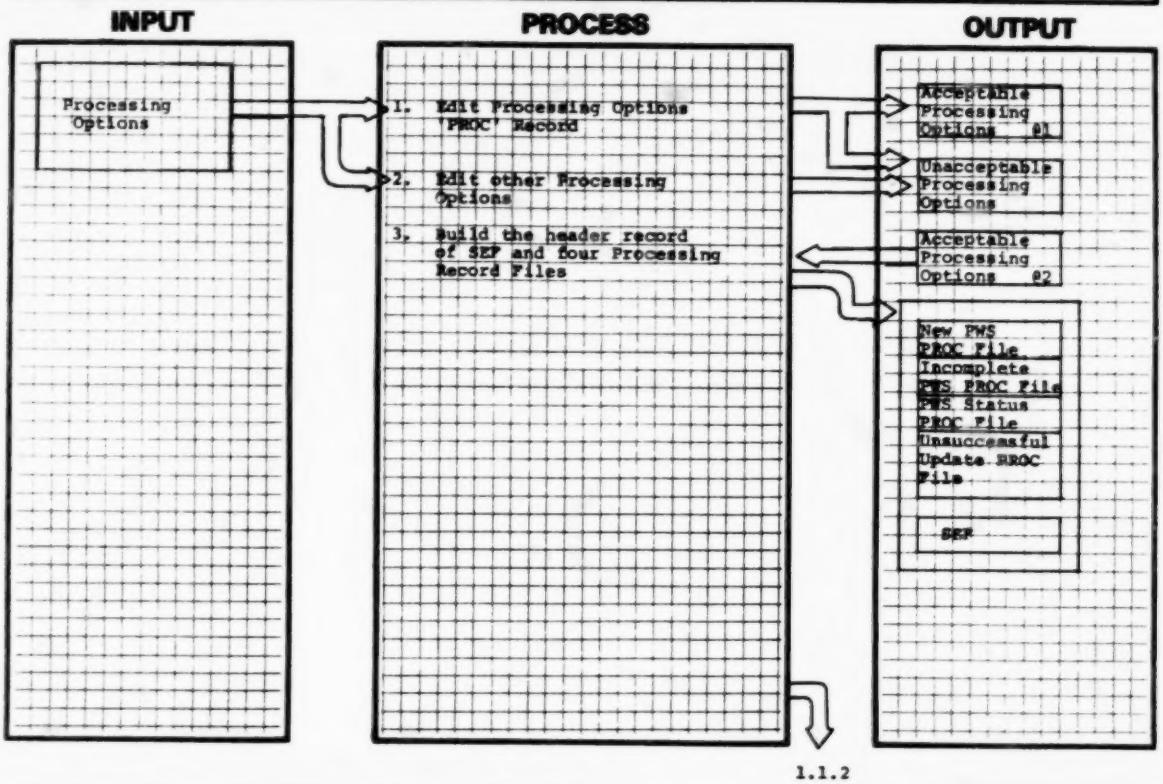


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options for this program are edited and header records are built for several intermediate report files and the Standard Error File (SEF).	1.1	PWSI010	
2	An internal Code Value Table (CVT) is built, which is used to edit values of data elements that are on the Public Water File (PWF) input transactions.	1.2	PWSI010	
3	PWF input transactions, (pre-sorted externally by PWS-ID, transaction code, and the two-position occurrence number) are read and edited. PWF input transactions in error are written to the SEF.	1.3	PWSI010	
4	The acceptable PWF input transactions are used to update, add, deactivate, delete, and select records on the PWF. Records selected are used in generating a status report. As each element of the PWF record is updated, a Public History File (PHF) record is created showing old and new values for updates, old values for deletions and new values for adds. As each record is updated, it is checked to see if it should be written to one of the intermediate report files.	1.4	PWSI010	
5	The PWF Update Statistics Report, showing results of the update, is produced.	1.5	PWSI010	
	Note: Error codes are located in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 3

Diagram No.: 1.1.1 **Description:** Edit Processing Options

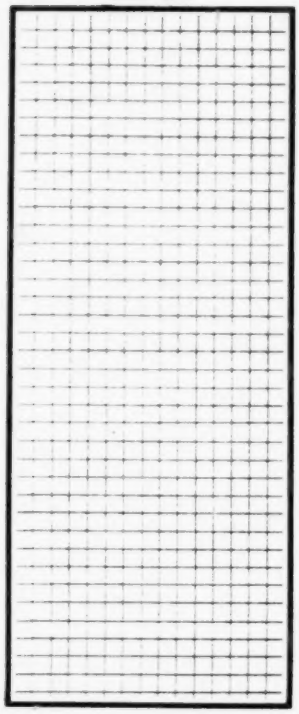


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Record with 'PROC' in positions 1-4 as follows: a. Current date must be a valid date. If not, processing will be terminated. If it is valid, convert to Julian mode for later use. b. Standard Error File (SEF) Processing Options may be "Y" or "N" for either. If invalid, default to "N". c. New PWF Report Option may be "1", "2", or "3". If invalid, default to "1". d. Incomplete PWS Report Option may be "2" or "3". If invalid, default to "3". e. PWS Status Report Option may be "2" or "3". If invalid, default to "3". f. PWS Unsuccessful Update Report Option may be a "1", "2" or "3". If invalid, default to "1". For steps (c) through (f) above: 1 = No Report 2 = Preprinted Status and Entry Form (Turnaround Document) 3 = Comprehensive Report If no 'PROC' records exist, or if multiple 'PROC' records exist, processing will be terminated.		PWSI010	111 211
2	Edit all other Processing Options records detected by the program. These are in error and processing will be terminated. (Catalogue number = 306, Error Code = '017').		PWSI010	

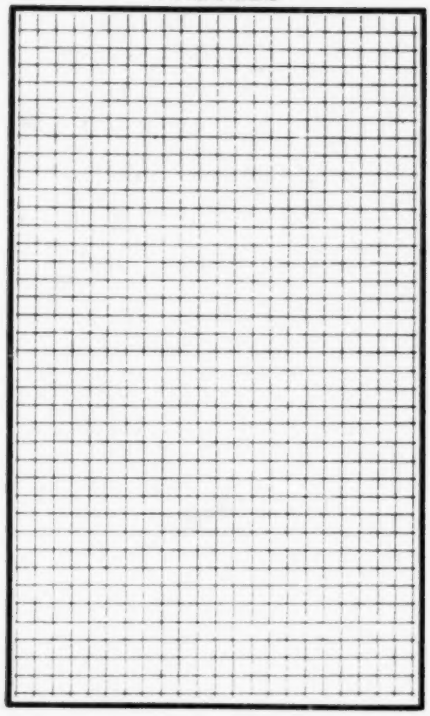
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 3-2-77 **Page:** 2 **of** 3
Diagram No.: 1.1.1 **Description:** Edit Processing Options

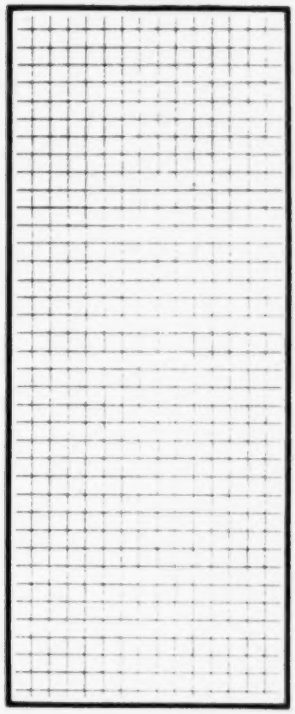
INPUT



PROCESS



OUTPUT

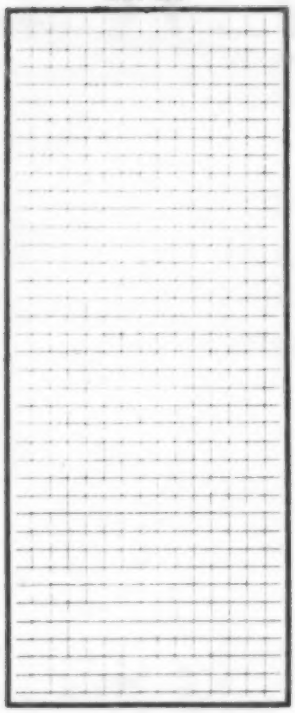


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	Build four PROC Files and the header record for the Standard Error File (SEF). Each PROC File will contain only one record which will determine if PWSI060 is to be processed and a report produced. Each of the four PROC Files are built as follows: a. 'PROC' is moved to positions 1-4. b. The current date to positions 5-10. c. If processing is to be terminated, move 'N's to positions 14-18 and make position 19 blank. Otherwise complete the four PROC Files as follows: (1) For New PWS PROC File, move 'N's to positions 15-18. If position 14 on the input processing option was '1' or defaulted to '1', move an 'N' to position 14. Otherwise, move a 'Y' to position 14. If position 14 on the input was '2', move a 'Y' to position 19, or if position 14 was a '3', move an 'N' to position 19, else make position 19 blank. (2) For Unsuccessful Update PROC File, move 'N's to positions 14, 15, 16, and 18. If position 17 on the input processing option was '1' or defaulted to '1', move an 'N' to position 17. Otherwise, move a 'Y' to position 17. If position 17 on the input processing option was '2', move a 'Y' to position 19, or if position 17 was a '3', move an 'N' to position 19, else make position 19 blank. (3) For Incomplete PWS PROC File, move 'N's to positions 14, 16, 17, and 18 and move a 'Y' to position 15. If position 15 on the input processing option was '2', then move 'Y' to position 19, otherwise, move an 'N' to position 19. (4) For PWS Status PROC File, move 'N's to positions 14, 15, 17 and 18 and move a 'Y' to position 16. If position 16 on the input processing options was a '2', then move 'Y' to position 19, otherwise move an 'N' to position 19.		PWSI010	204 MSIS. 208

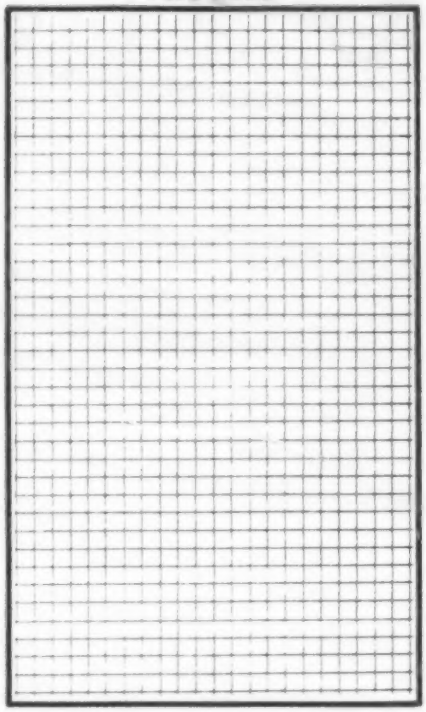
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 3-2-77 **Page:** 3 **of** 3
Diagram No.: 1.1.1 **Description:** Edit Processing Options

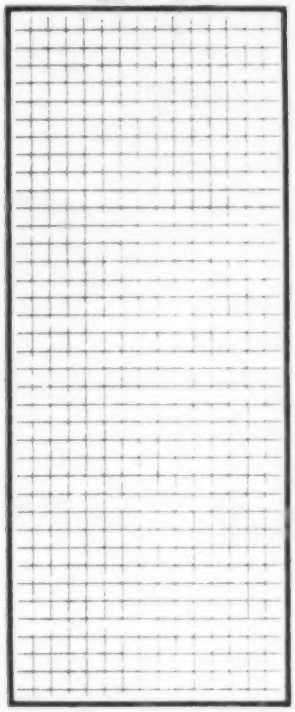
INPUT



PROCESS



OUTPUT

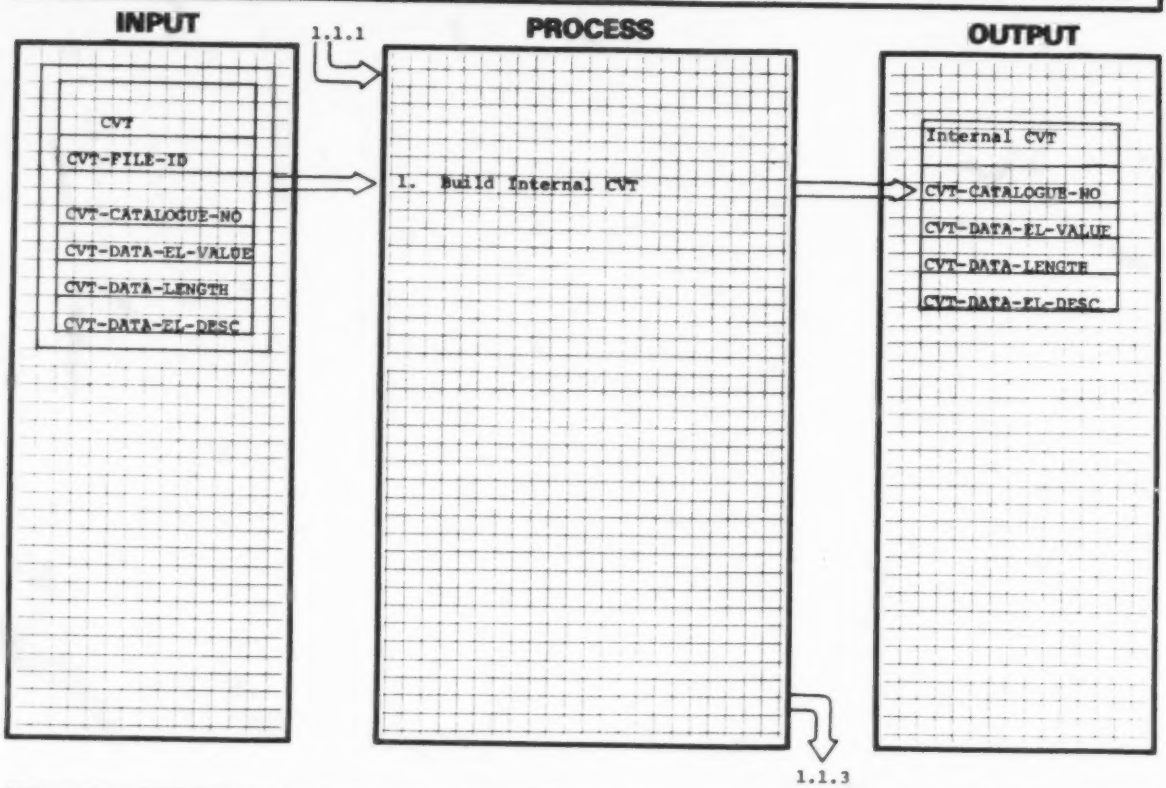


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the header record for SEF as follows: a. Move 'LOW VALUES' to positions 1-4. b. If processing is to be terminated move blanks to the rest of the record. Otherwise: (1) Move current date to positions 5-10. (2) Move the options or default options to positions 11-12. (3) Move the file ID - 'PW' to positions 79-80.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 1.1.2 **Description:** Build Internal CVT

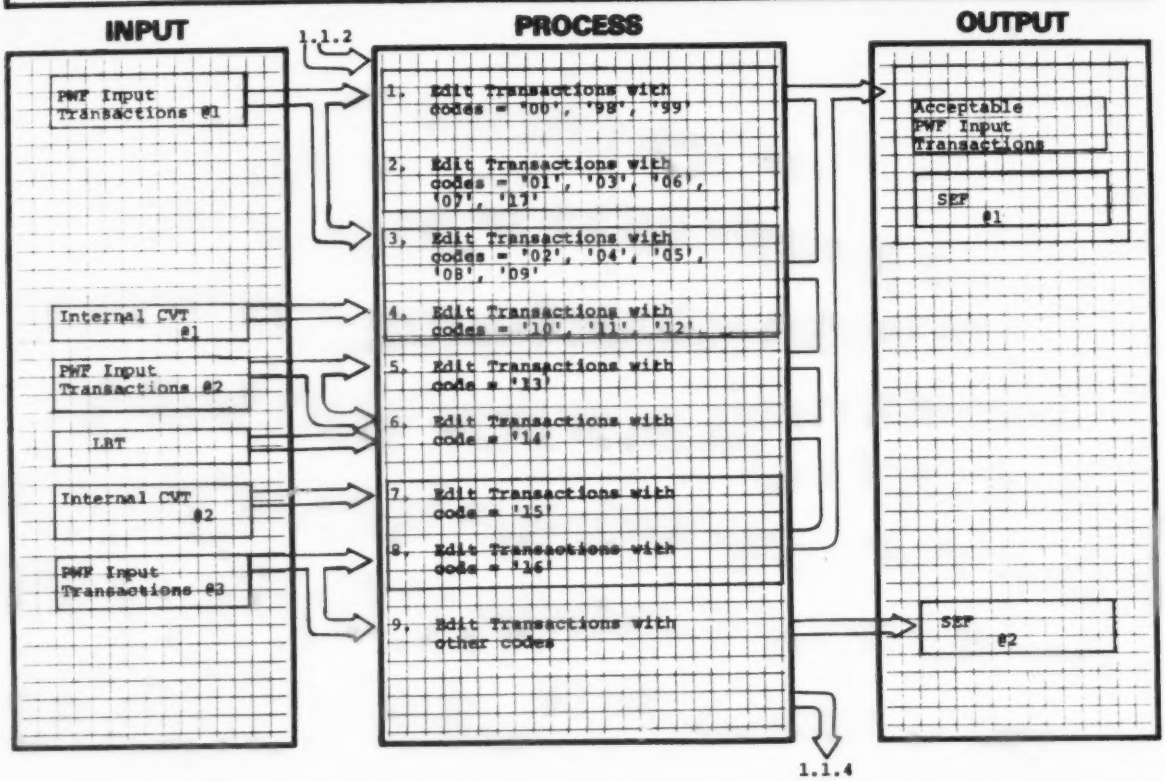


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Code Value Table (CVT) of data element edit values. Appropriate records are stored in an internal CVT to be used as edit criteria when certain fields are verified. The edit values are contained in two external CVT files. One has only the values for editing the data elements existing on the Public Water File (PWF) and thus is stored in its entirety. The other has values for common data elements, some of which are stored in the PWF. For this program, obtain values for Contaminant ID and Postal State Code from the common CVT. NOTE: Special logic is needed to build latitude and longitude values, catalogue numbers 248, 249. In CVT-DATA-EL-VALUE for these data elements is county code and in CVT-DATA-EL-DESC in positions 1-7 and 9-15 are the minimum and maximum values for that county.		PWSI010	MSIS. 206 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 1.1.3 **Description:** Edit PWF Input Transactions

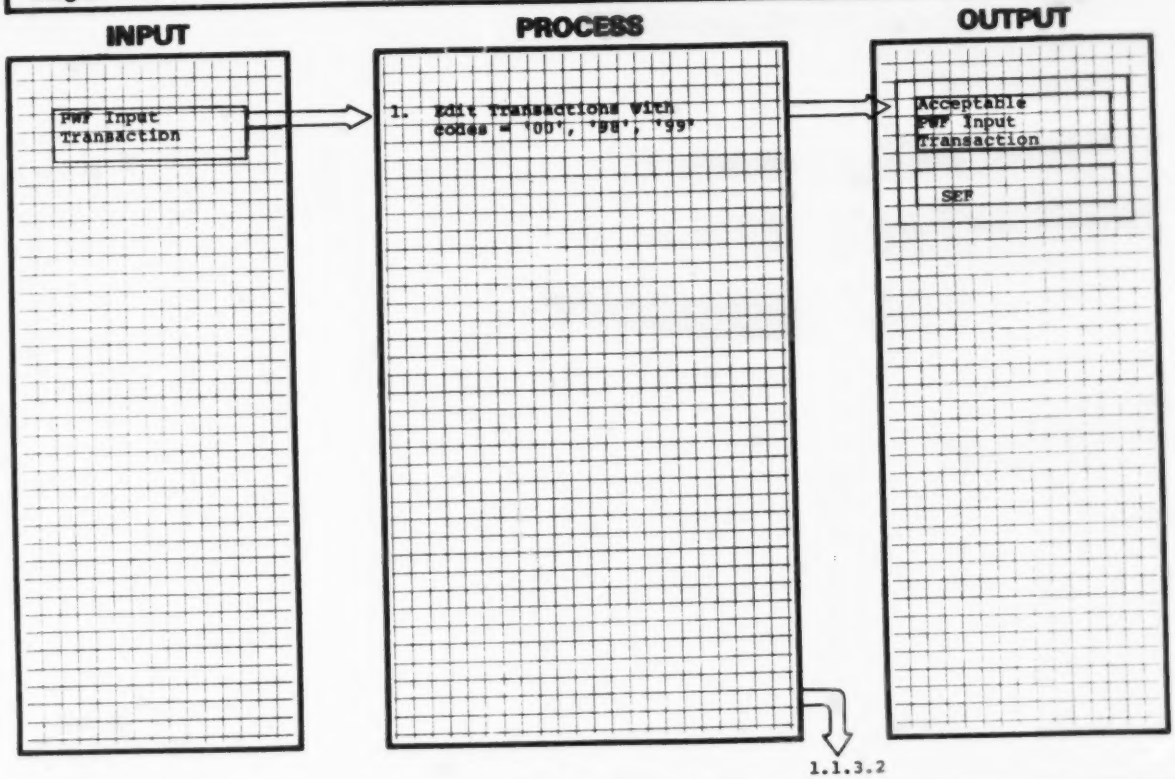

INPUT
PROCESS
OUTPUT
1.1.2
PWF Input Transactions #1
Internal CVT #1
PWF Input Transactions #2
LRT
Internal CVT #2
PWF Input Transactions #3
1. Edit Transactions with codes = '00', '98', '99'
2. Edit Transactions with codes = '01', '03', '06', '07', '17'
3. Edit Transactions with codes = '02', '04', '05', '08', '09'
4. Edit Transactions with codes = '10', '11', '12'
5. Edit Transactions with code = '13'
6. Edit Transactions with code = '14'
7. Edit Transactions with code = '15'
8. Edit Transactions with code = '16'
9. Edit Transactions with other codes
Acceptable PWF Input Transactions
SEF #1
SEF #2
1.1.4

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Transactions with codes = '00', '98', or '99' in positions 8-9.	1.1.3.1	PWSI010	
2	Edit the Transactions with codes = '01', '03', '06', '07', or '17' in positions 8-9.	1.1.3.2	PWSI010	
3	Edit the Transactions with codes = '02', '04', '05', '08', or '09' in positions 8-9.	1.1.3.3	PWSI010	
4	Edit the Transactions with codes = '10', '11', or '12' in positions 8-9.	1.1.3.4	PWSI010	
5	Edit the Transactions with code = '13' in positions 8-9.	1.1.3.5	PWSI010	
6	Edit the Transactions with code = '14' in positions 8-9.	1.1.3.6	PWSI010	
7	Edit the Transactions with code = '15' in positions 8-9.	1.1.3.7	PWSI010	
8	Edit the Transactions with code = '16' in positions 8-9.	1.1.3.8	PWSI010	
9	Edit the Transactions with codes not equal to the previously mentioned codes in positions 8-9. NOTE: All transactions in error generate a record in the Standard Error File (SEF). The specific error codes to be used may be found in the Data Element Dictionary (DED). NOTE: The dollar sign ($) in the leftmost position of an otherwise blank field denotes value reinitialization and is an acceptable value for all elements, unless otherwise noted. NOTE: Edit criteria is located in the Data Element Dictionary (DED).	1.1.3.9	PWSI010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 3-2-77 Page: 1 of 1

Diagram No.: 1.1.3.1 Description: Edit Transactions with Codes = '00', '98', '99'

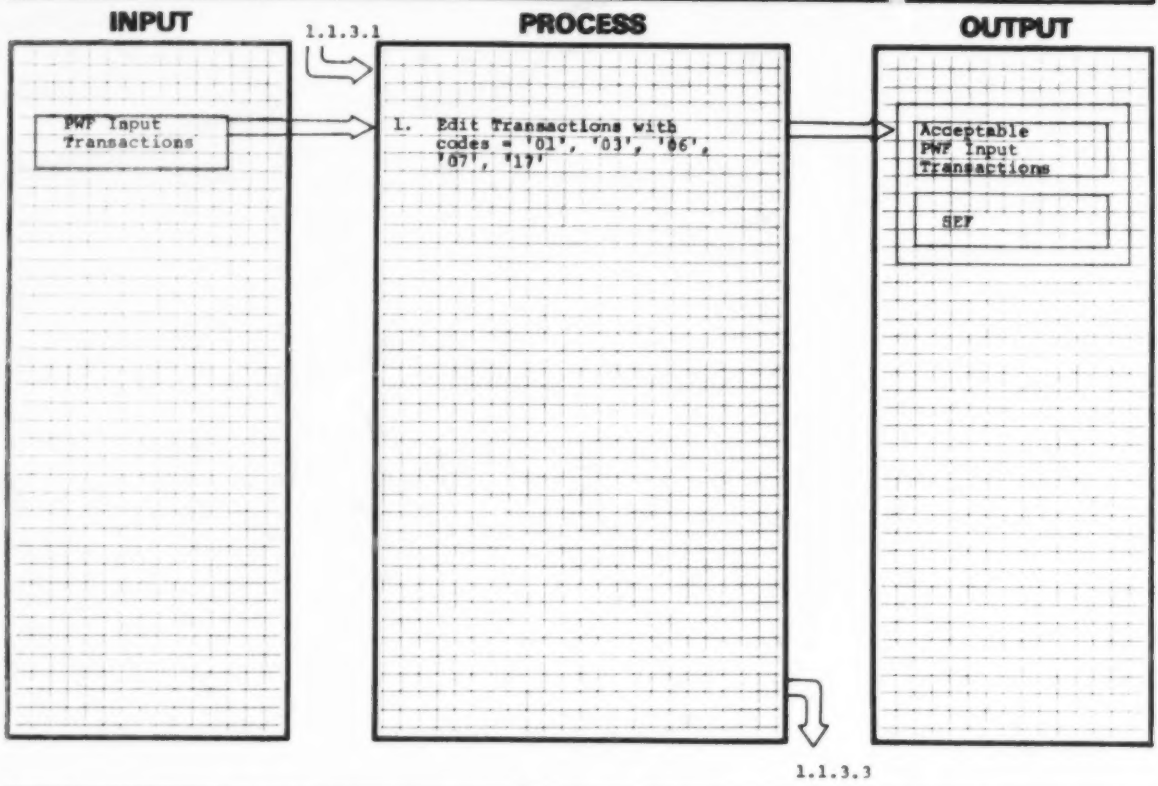


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	These transactions types: a. Trigger creation of a new Public Water File (PWF) Record (Code = '00') b. Request status of a PWF Record (Code = '98') c. Delete an existing PWF Record (Code = '99') The transactions are edited as follows: a. The PWF-ID must be a 7 character numeric string b. The transaction flag must equal a "Y" Transactions in error are written to the Standard Error File (SEF). If the transaction flag is not equal to "Y", these transactions should be assigned an: a. Error code = 20 and a catalogue number = 910 for Tran code = '99' b. Error code = 21 and a catalogue number = 910 for Tran code = '00' c. Error code = 24 and a catalogue number = 910 for Tran code = '98'		PWSI010	213 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 3-2-77 **Page:** 1 **of** 1

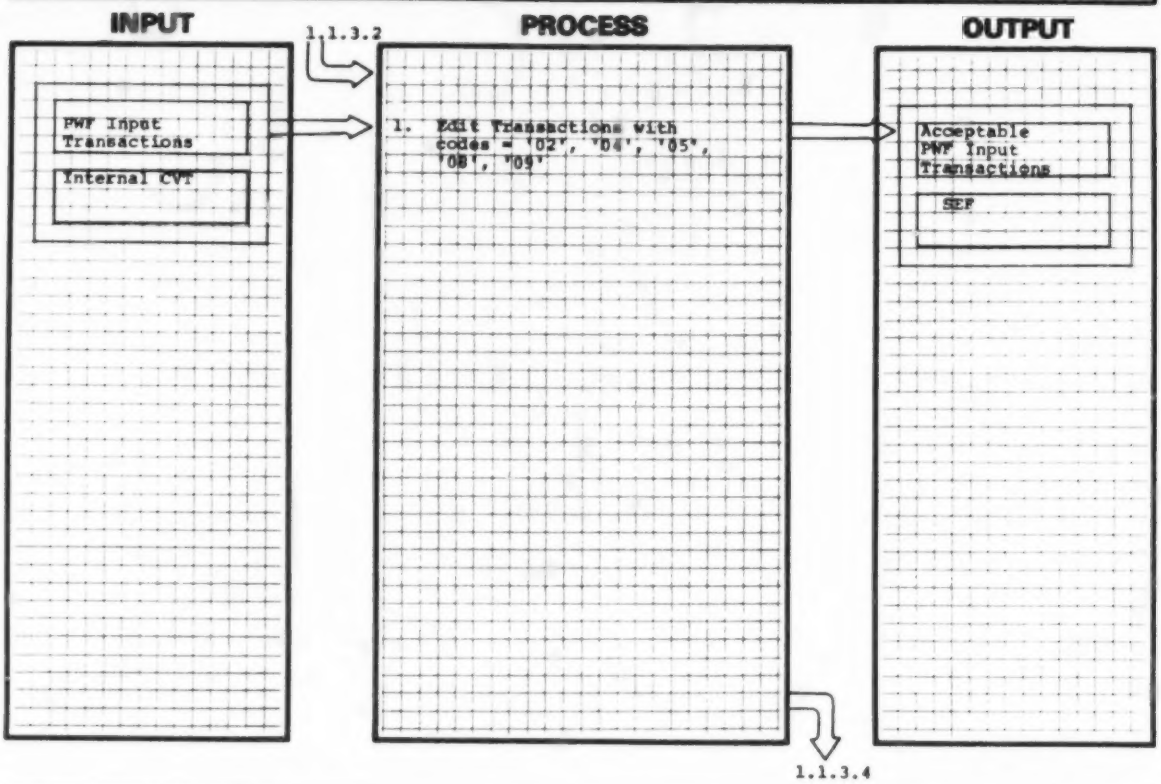
Diagram No.: 1.1.3.2 **Description:** Edit Transactions with Codes = '01','03','06','07','17'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	These transactions update the following information on the Public Water File (PWF): a. Owner Information (Code = '01') b. Mailing Information (Code = '03') c. Plant Information (Code = '06', '07') d. State Discretionary Data (Code = '17') All fields are edited according to the criteria given in the Data Element Dictionary (DED). The dollar sign ($) indicating value reinitialization, may not be used for any value mandatory for MSIS processing. If a transaction having a code = '00' with the same PWS-ID was previously rejected this entire transaction is also rejected. Transactions in error are written to the Standard Error File (SEF).		PWSI010	214 216 219 220 233 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

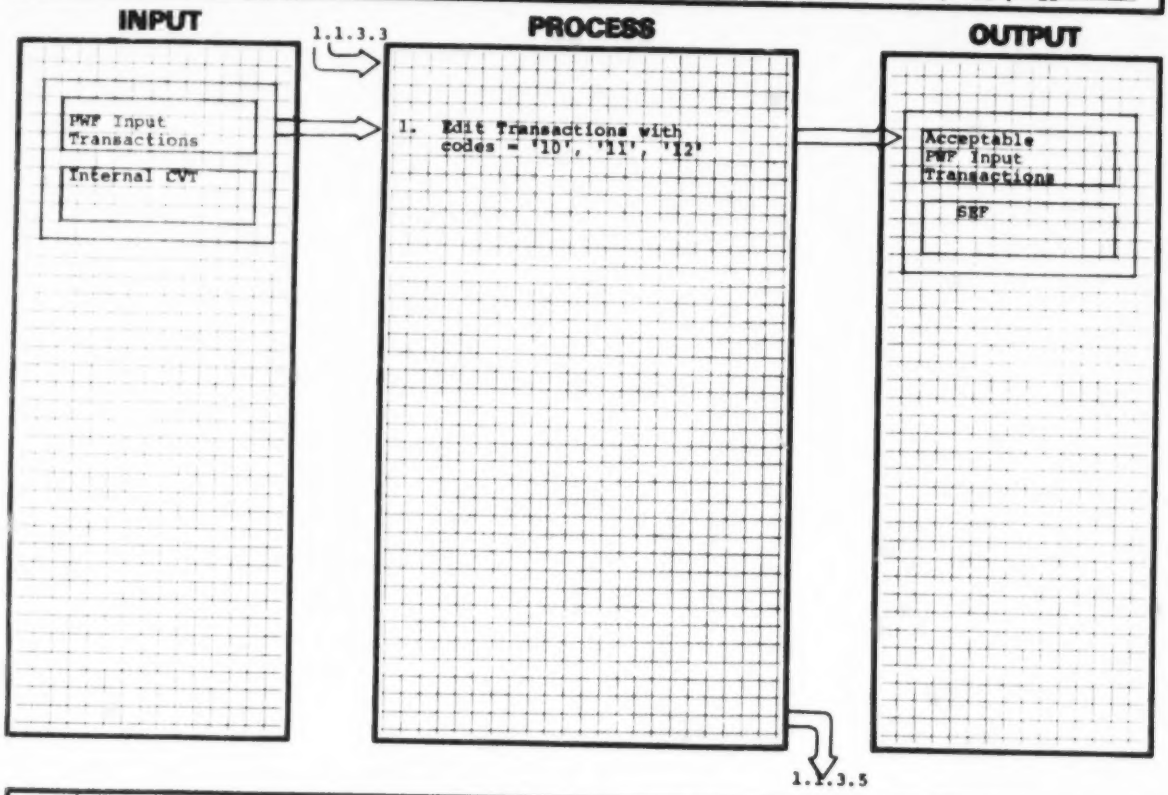
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 **of** 1
Diagram No.: 1.1.3.3 **Description:** Edit Transactions with Codes = '02','04','05','08','09'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	These transactions update the following information on the Public Water File (PWF): a. Owner Information (Code = '02') b. Mailing Information (Code = '04') c. Plant Information (Code = '05') d. Water System Information, Bacteria & Turbidity Monitoring Information (Codes = '08', '09') All fields are edited according to the criteria in the Data Element Dictionary (DED). The dollar sign ($), indicating value reinitialization, may not be used for any value mandatory for MSIS processing. If a transaction having a code = '00' with the same PWS-ID was previously rejected, this entire transaction is also rejected. Transactions in error are written to the Standard Error File (SEF).		PWSI010	215 217 218 221 222 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 1
Diagram No.: 1.1.3.4 **Description:** Edit Transactions with Codes = '10', '11', '12'

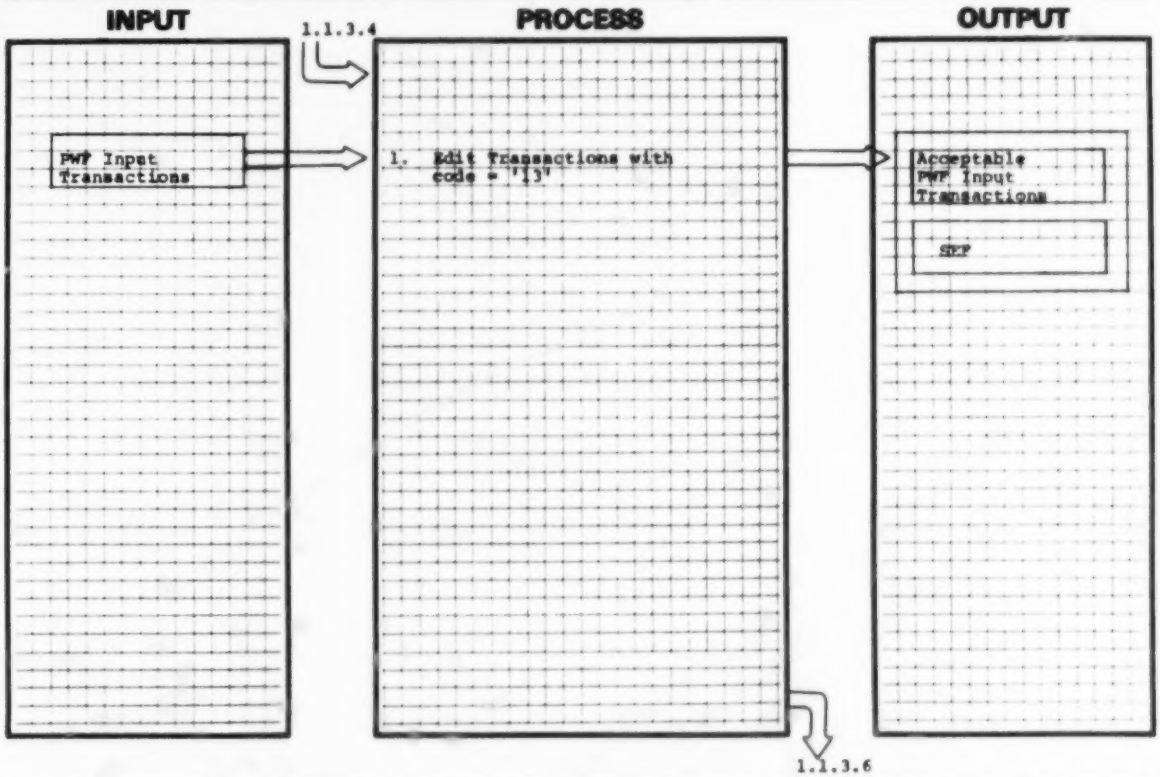


STEP	EXTENDED DESCRIPTION	REFERENCES		
		MPO	PROGRAM	OTHER
1	These transactions update the following information on the Public Water File (PWF): a. Chemical Follow-Up Sampling Information (Code = '10') b. Organic, Inorganic, Radiological Monitoring Information (Codes = '11', '12') All fields are edited according to the criteria in the Data Element Dictionary (DED). In addition, because some of the information from these transactions is stored in arrays, occurrence numbers must be checked. PWFI-OCCURANCE10 (on transaction code = '10') numeric must be from 1 & 4 inclusive, PWFI-OCCURANCE12 (on transaction code = '12') numeric must be from 1 & 10 inclusive. If the occurrence number is invalid, these transactions are in error and should be assigned an: a. error code = 26 and a catalogue number = 912 for Tran Code = '10' b. error code = 26 and a catalogue number = 913 for Tran Codes = '11' and '12' and written to the Standard Error File (SEF). The dollar sign ($) indicating value reinitialization may not be used for any value mandatory for MSIS processing or the two aforementioned occurrence numbers. If a transaction having a code = '00' with the same PWS-ID was previously rejected this entire transaction is also rejected. Transactions in error are written to the Standard Error File (SEF).		PWSI010	223 224 225 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 1.1.3.5 **Description:** Edit Transactions with Code = '13'

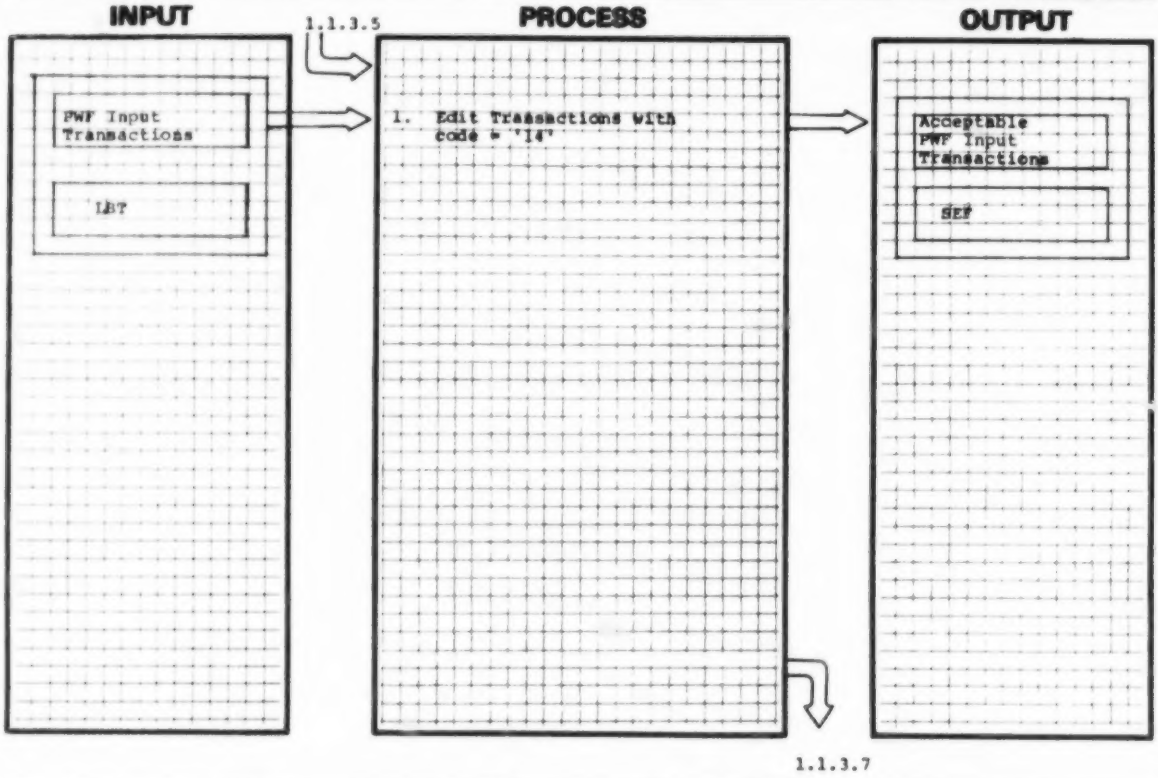


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction updates information regarding Radiological Monitoring and Operator Reporting on the Public Water File (PWF). All fields are edited according to the criteria in the Data Element Dictionary (DED). The dollar sign ($), indicating value reinitialization may not be used for any value mandatory for MSIS processing. If a transaction having a code = '00' with the same PWS ID was previously rejected this entire transaction is also rejected. Transactions in error are written to the Standard Error File (SEF).		PWSI010	226 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 3-2-77 **Page:** 1 **of** 1

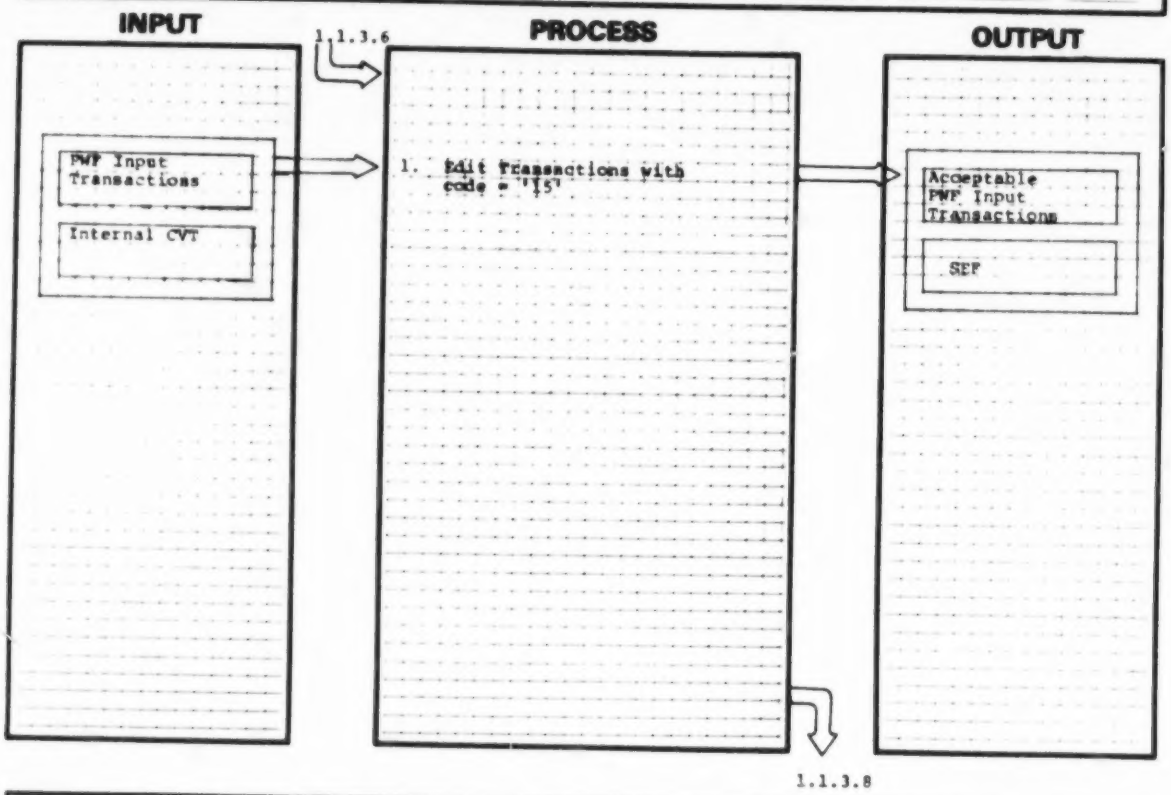
Diagram No.: 1.1.3.6 **Description:** Edit Transactions with Code = '14'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction updates information regarding laboratories on the Public Water File (PWF). PWSI-OCCURANCE14 must be numeric and must be from 1 & 5 inclusive. If the occurrence number is invalid, these transactions are in error and should be assigned an: a. error code = 026 and a catalogue number = 912 for Tran Code = '14' and written to the Standard Error File (SEF).			227 WAQC. 250 WAQC. 256 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 1
Diagram No.: 1.1.3.7 **Description:** Edit Transactions with Code = '15'

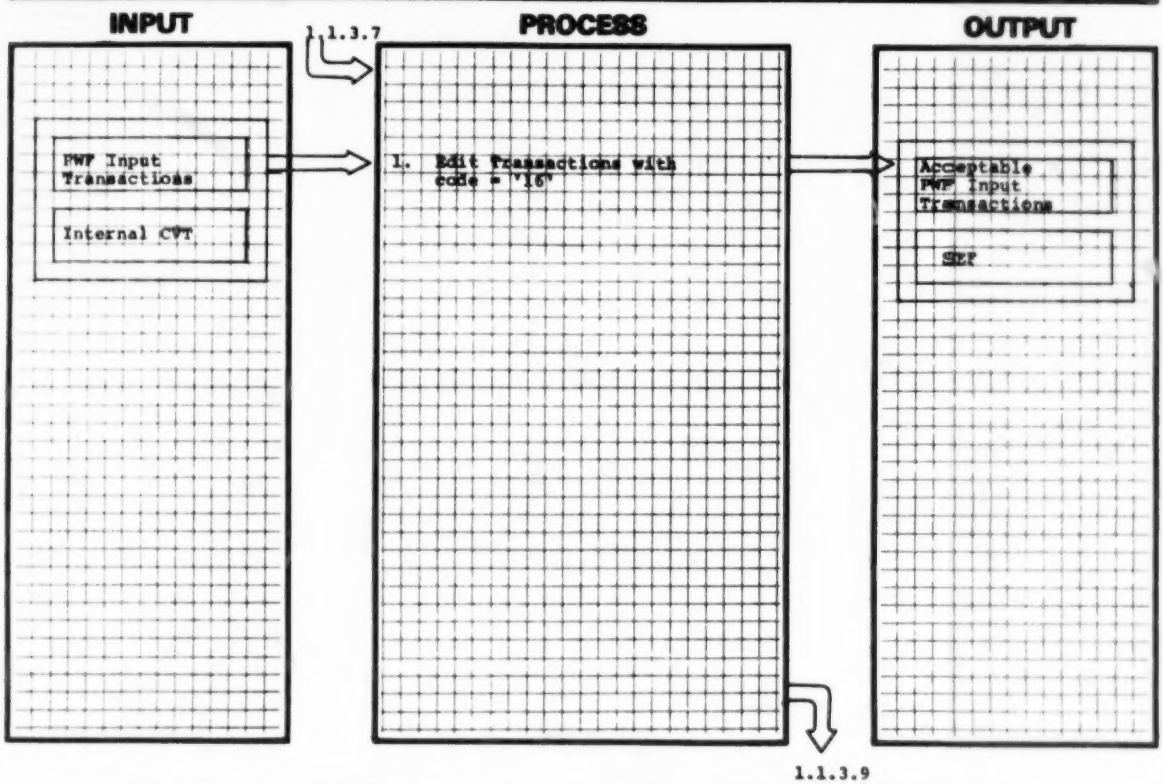


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction updates information regarding Variances, Exemptions and Enforcement Actions on the Public Water File (PWF). All fields are edited according to the criteria in the Data Element Dictionary. In addition, PWFI-OCCURANCE15 may be: a. Numeric, from 1 & 4 inclusive, indicating manual input. b. Alphanumeric, "*" or "D" indicating automatic input from the Variances and Exemptions Subsystem. If the occurrence number is invalid, then this transaction is in error should be assigned an error code = 026 and a catalogue number = 912. If a transaction having a code = '00' with the same PWS-ID was previously rejected this entire transaction is also rejected. Transactions in error are written to the Standard Error File (SEF). The fields PWFI-VAEX-MODIFIED-MCL and PWFI-VAEX-MODIFIED-MCL-DEC must be considered together. If one is blank, the other must be. If one is reinitialized, the other must be.			228 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 1

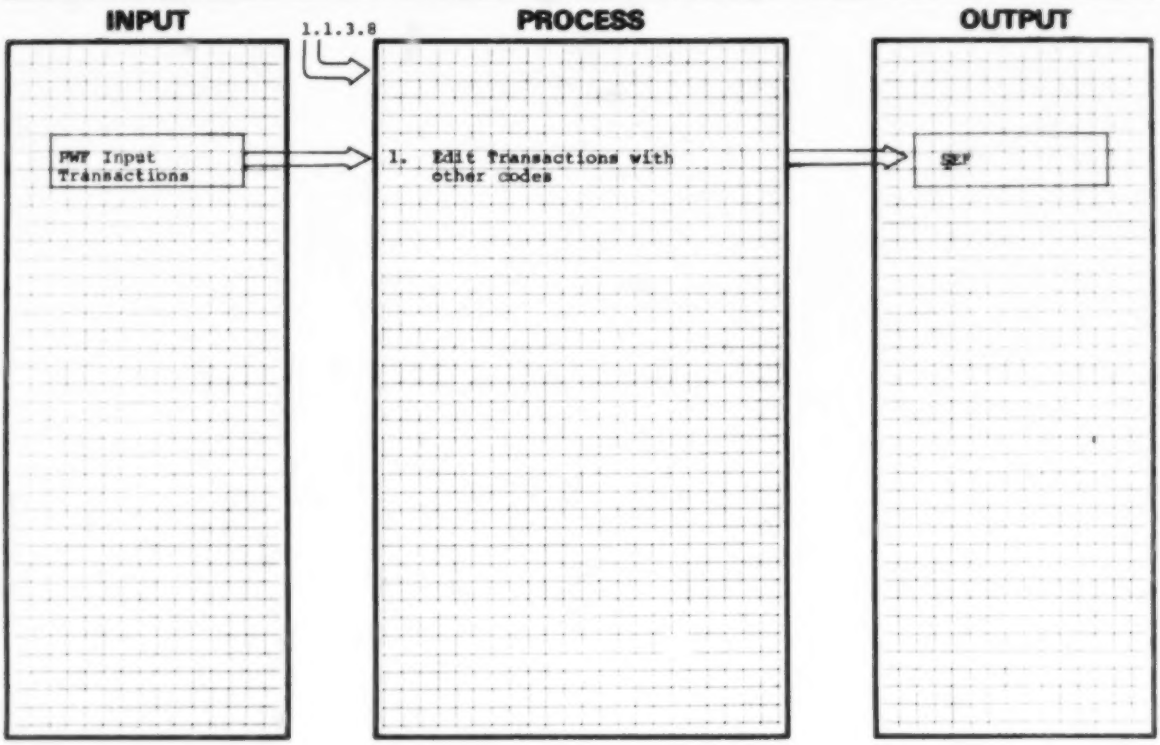
Diagram No.: 1.1.3.8 **Description:** Edit Transactions with Code = '16'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		MPO	PROGRAM	OTHER
1	This transaction updates information regarding water sources on the Public Water File (PWF) and is the variable portion of the PWF Record. All fields are edited according to the criteria in the Data Element Dictionary (DED). In addition, the PWFI-OCCURANCE16 must be numeric, from 1 and 15 inclusive. If the occurrence is invalid, this transaction is in error and should be assigned an error code = 026 and a catalogue number = 913. The dollar sign ($), indicating value reinitialization, may not be used for any value mandatory for MSIS processing. If a transaction having a code = '00' with the same PWS-ID was previously rejected this entire transaction is also rejected. Transactions in error are written to the Standard Error File (SEF).			229 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 **of** 1
Diagram No.: 1.1.3.9 **Description:** Edit Transactions with Other Codes

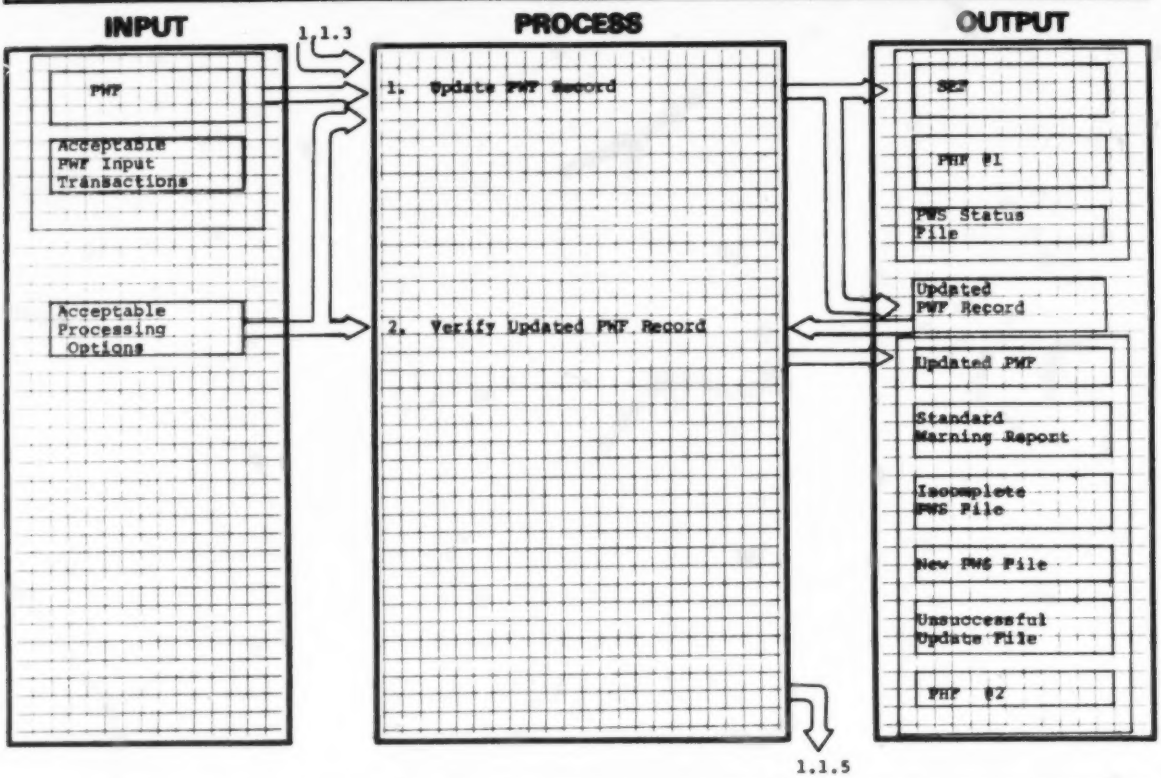


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transactions having codes not equal to those previously mentioned are in error and are written to the Standard Error File (SEF). These transactions should be assigned an error code = 017 and a catalogue number = 906.		PWSI010	MSIS. 207

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 1.1.4 **Description:** Update PWF

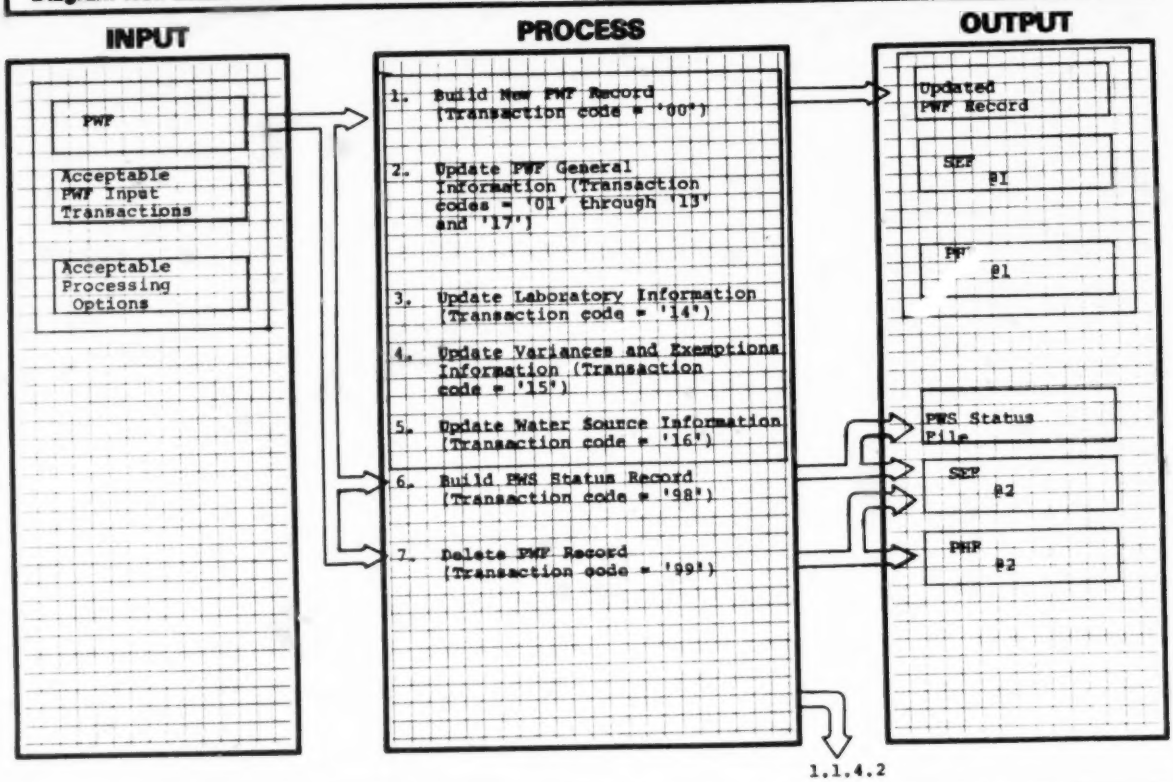


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Perform the actual update of the Public Water File (PWF) records according to the accepted input transactions. Since status requests are in the form of input transactions, the PWS Status File is also built here.	1.1.4.1	PWSI010	
2	The updated PWF Record is verified to see that: a. All MSIS required fields are present for new records. b. All fields required for reporting to EPA are present for new records. c. New records, incomplete new records, and records which underwent unsuccessful updates are written to the appropriate file. If the record passes all verifications it is written to the updated PWF. If a new PWF record is incomplete, all of the Public History File (PHF) transactions previously created must be flagged not for updating the PHF. This is done by creating a single PHF transaction with: a. the same PWS-ID as the PWS in the input transactions b. 'LOW VALUES' for the data element code c. make the rest of the record blank.	1.1.4.2	PWSI010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 **of** 1

Diagram No.: 1.1.4.1 **Description:** Update PWF Record

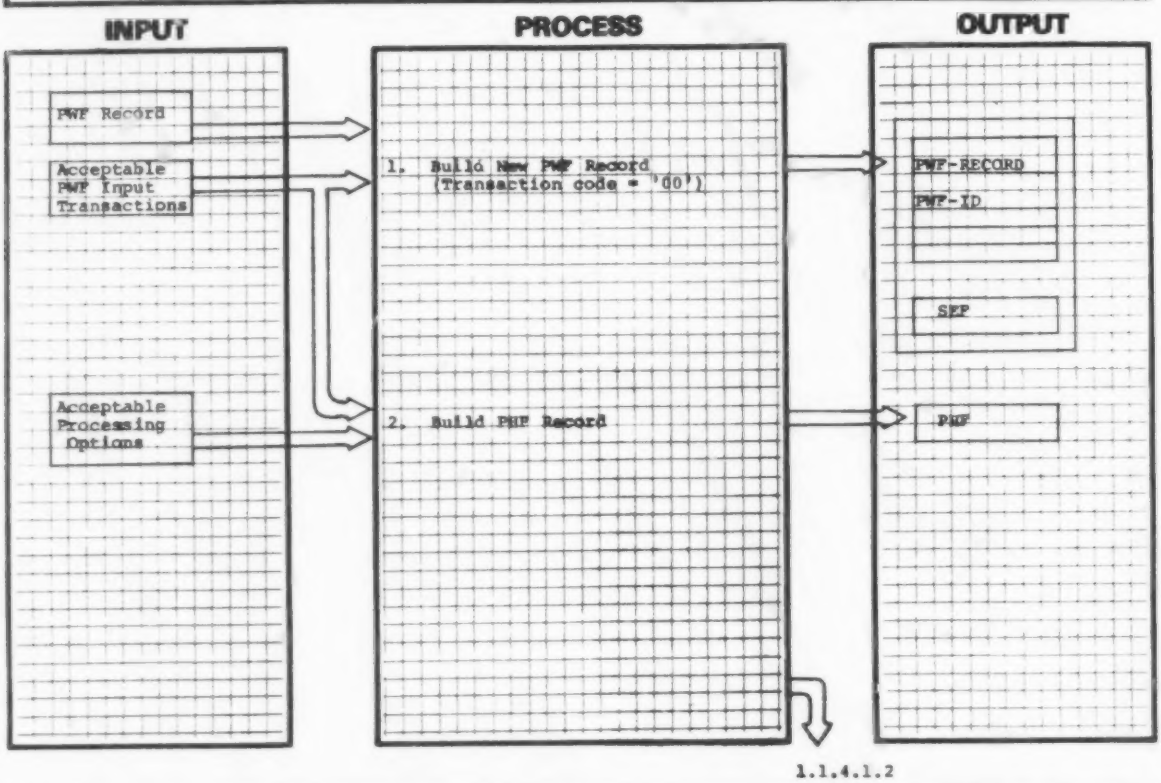


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a new Public Water File (PWF) Record for Transaction code = '00'.	1.1.4.1.1	PWSI010	
2	Update the PWF General Information for Transaction codes = '01' thru '13' and '17'.	1.1.4.1.2	PWSI010	
3	Update the Laboratory Information for Transaction code = '14'.	1.1.4.1.3	PWSI010	
4	Update the Variances and Exemptions Information for Transactions code = '15'.	1.1.4.1.4	PWSI010	
5	Update the Water Source Information for Transaction code = '16'.	1.1.4.1.5	PWSI010	
6	Build a Public Water System (PWS) Status Record for Transaction code = '98'.	1.1.4.1.6	PWSI010	
7	Delete the PWF Record for Transaction code = '99'.	1.1.4.1.7	PWSI010	
	NOTE: Only non-blank edited fields of the Acceptable PWF Input Transactions are used in the update.			
	NOTE: All transactions in error generate a record in the Standard Error File (SEF). The specific error codes to be used may be found in the Data Element Dictionary (DED).			
	NOTE: A dollar sign ($) in the leftmost position of an otherwise blank input transaction field indicates the corresponding data element on the PWF Record should be reinitialized to blanks for alphanumerics and zeros for numerics unless a default value or other criteria as stated on the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 1.1.4.1.1 **Description:** Build New PWF Record

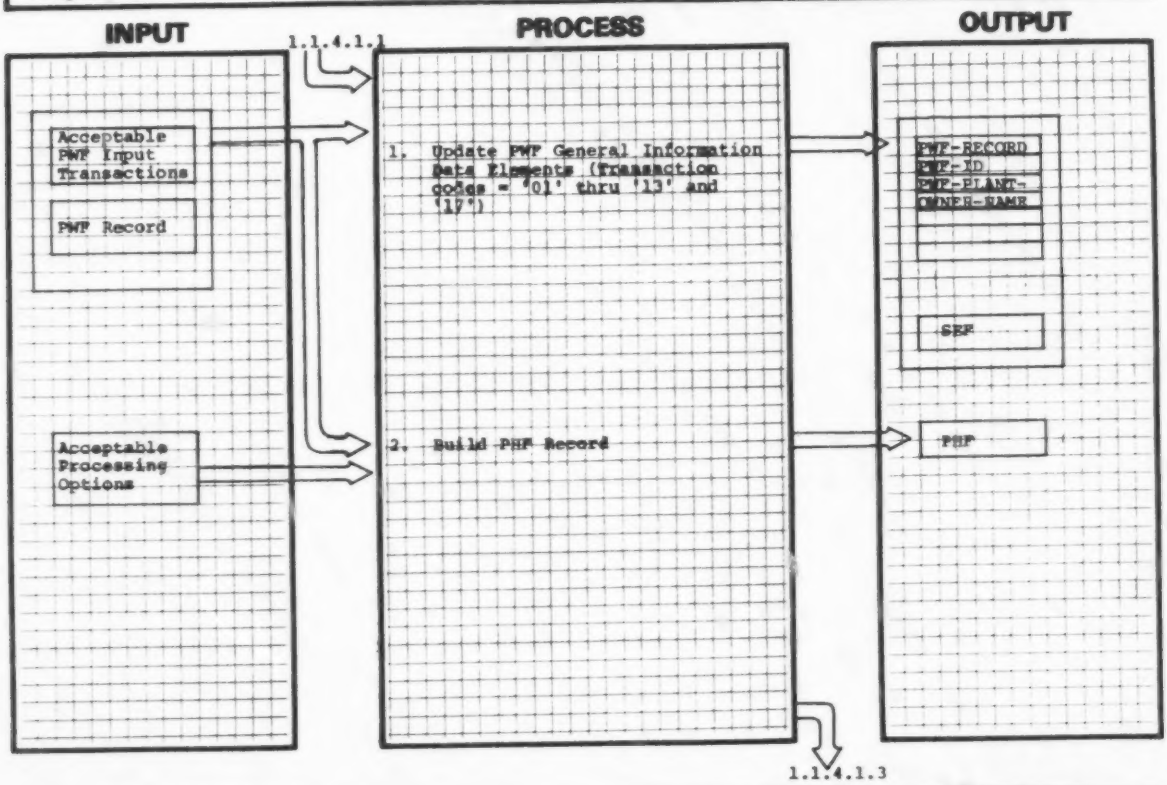


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '00' creates a new Public Water File (PWF) record. The storage areas are initialized in core and should be filled in by other transactions. All alphanumeric fields should be initialized to blanks. All numeric fields should be initialized to zeros unless default values or other criteria are stated on the Data Element Dictionary (DED). If the specified PWF-ID is already on the PWF, the transaction is in error and is written to the Standard Error File (SEP). In addition, a program control flag is set so that all other input transactions with the same PWS-ID will be rejected, so the original record on the PWF will not be erroneously updated.		PWSI010	213 200 MSIS. 207 DED
2	Build a Public History File (PHF) Record. Use the new PWF-ID for PHF-PWS-ID and PHF-NEW-VALUE, the Julian date from the 'PROC' record for PHF-CURRENT-UPDATE-DATE and PHF-LAST-UPDATE-DATE with the rest of the PHF elements blank.		PWSI010	202 211

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 1.1.4.1.2 **Description:** Update PWF General Information

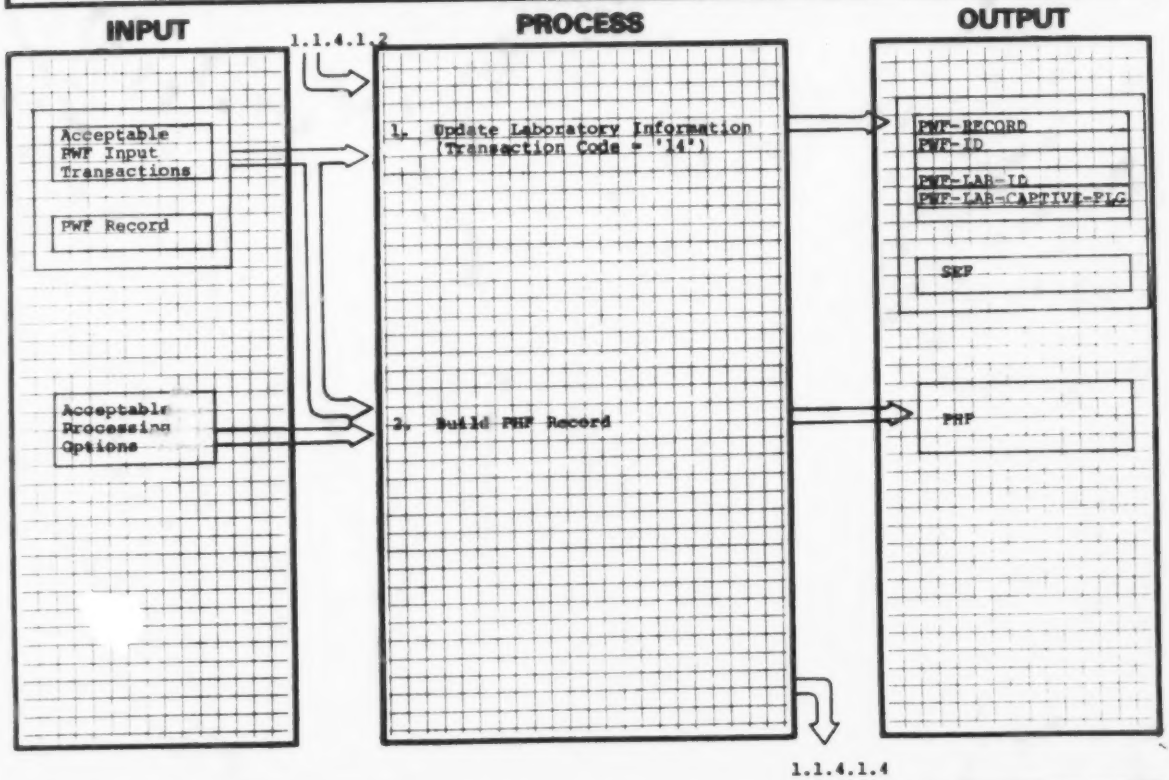


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction Codes = '01' thru '13' and '17' allow updating of the General Information Data Elements (i.e. Owner Information, Plant Information, Information relating to Bacteria, Turbidity, Chemical or Radiological Sampling) which are contained on the non-variable part of the Public Water File (PWF) record. As such, information is updated element by element from the input transaction to the record. For data in arrays, occurrence number is specified on the input transaction. The Data Element Dictionary (DED) contains information concerning further element editing. If the PWF-ID specified on the input transaction is not present on the PWF, the entire transaction is in error and is written to the Standard Error File (SEF).		PWSI010	200 214 thru 226 233 MSIS. 207 DED
2	As each data element of the PWF is updated, a Public History File (PHF) record is built. For those elements on the PHF record which may not yet be present on the PWF record (such as PWF-STATE-REGION contained on transaction '09') blanks may be used.		PWSI010	200 202 211

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 1.1.4.1.3 **Description:** Update Laboratory Information

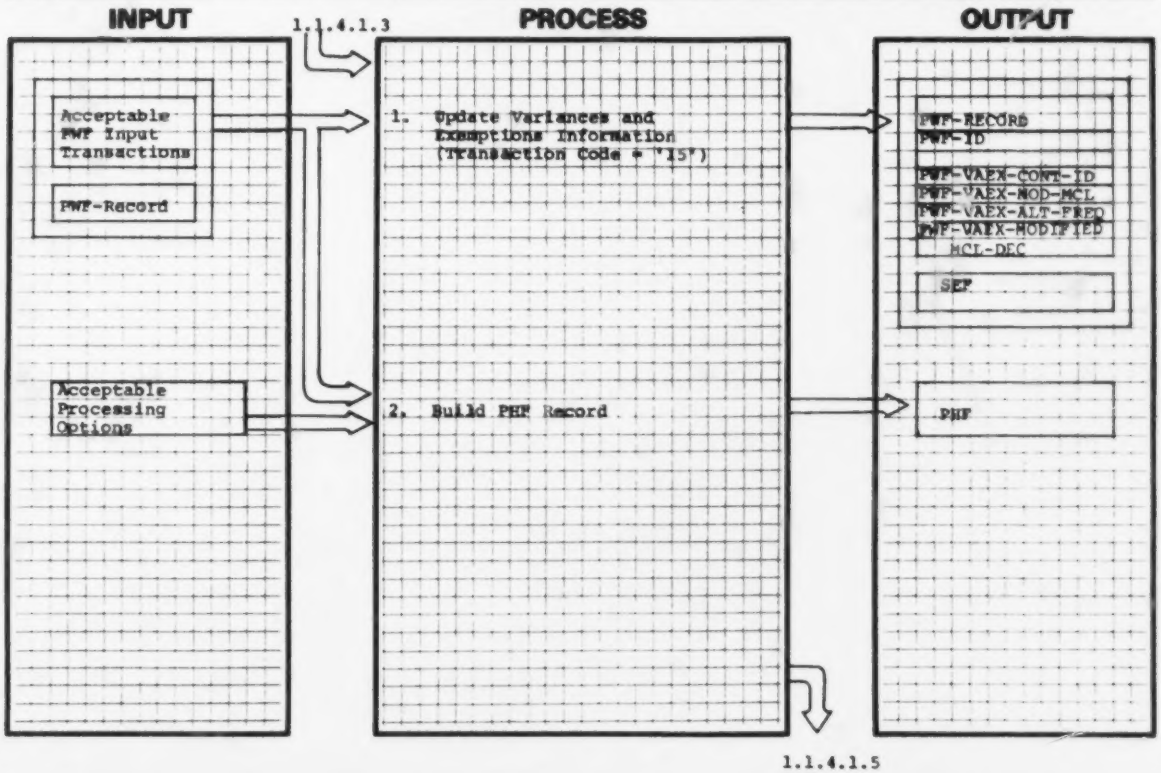


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction Code = '14' allows updating of Laboratory Information on the Public Water File (PWF) record. This information is stored in an array occurring five times in the record. The input transaction specifies which occurrence is to be updated. If the PWF-ID specified on the input transaction is not present on the PWF, the entire transaction is in error and is written to the Standard Error File (SEF).		PWSI010	200 227 MSIS. 207
2	As each data element is updated, a Public History File (PHF) record is built.		PWSI010	202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 3-2-77 **Page:** 1 of 2

Diagram No.: 1.1.4.1.4 **Description:** Update Variances & Exemptions Information



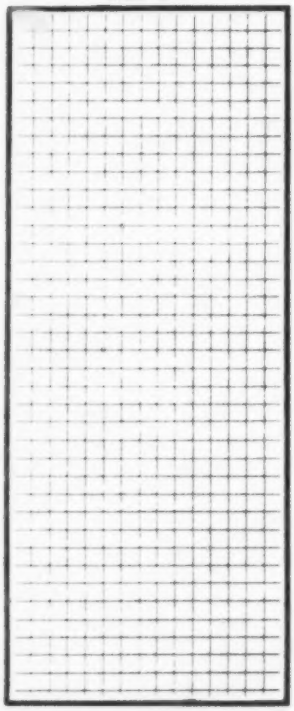
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HPO	PROGRAM	OTHER
1	Transaction Code = '15' allows updating of Variances & Exemptions and Enforcement Actions Information on the Public Water File (PWF) Record. This information is stored in an array, occurring four times in the record. If the input transaction was manually generated, the occurrence number to be updated is specified on the transaction. If the input transaction was created by the Variances and Exemtions subsystem, the occurrence field of the transaction will contain an "*" or a "D". a. An "*" indicates the information is to be added to the PWF Record. Search for the first all blank occurrence and place the information there. If there are no blank occurrences, indicating all four occurrences are being used, the transaction is in error and is written to the Standard Error File (SEF). b. A "D" indicates the information is to be deleted from the PWF Record. Search for an identically matching occurrence (all four fields must match) and if found, reinitialize it to blanks. If there is no match, the transaction is in error and is written to the Standard Error File (SEF). If the Variance, Exemption or Enforcement Action was just added or changed, the contaminant ID should be checked against the contaminant ID's (multiple occurrences) in the Chemical Follow-Up monitoring section of the PWF record. If the contaminant ID matches, the whole chemical follow-up monitoring occurrence (contaminant ID and sampling frequence) should be reinitialized.		PWSI010	200 228 MSIS. 207

MODEL STATE INFORMATION SYSTEM

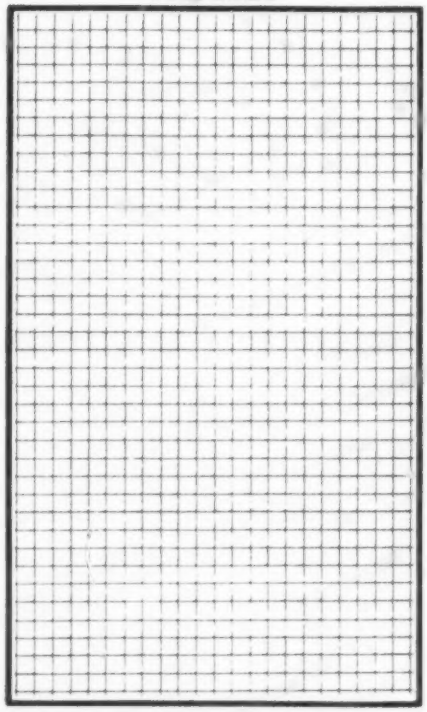
Diagram Type: Detail Subsystem: Public Water System Inv. Date: 3-2-77 Page: 2 of 2

Diagram No.: 1.1.4.1.4 Description: Update Variances and Exemptions Information

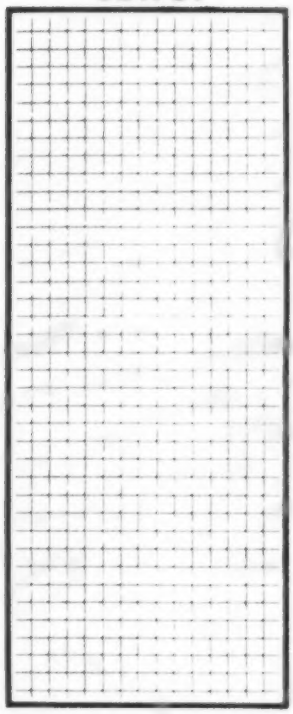
INPUT



PROCESS



OUTPUT

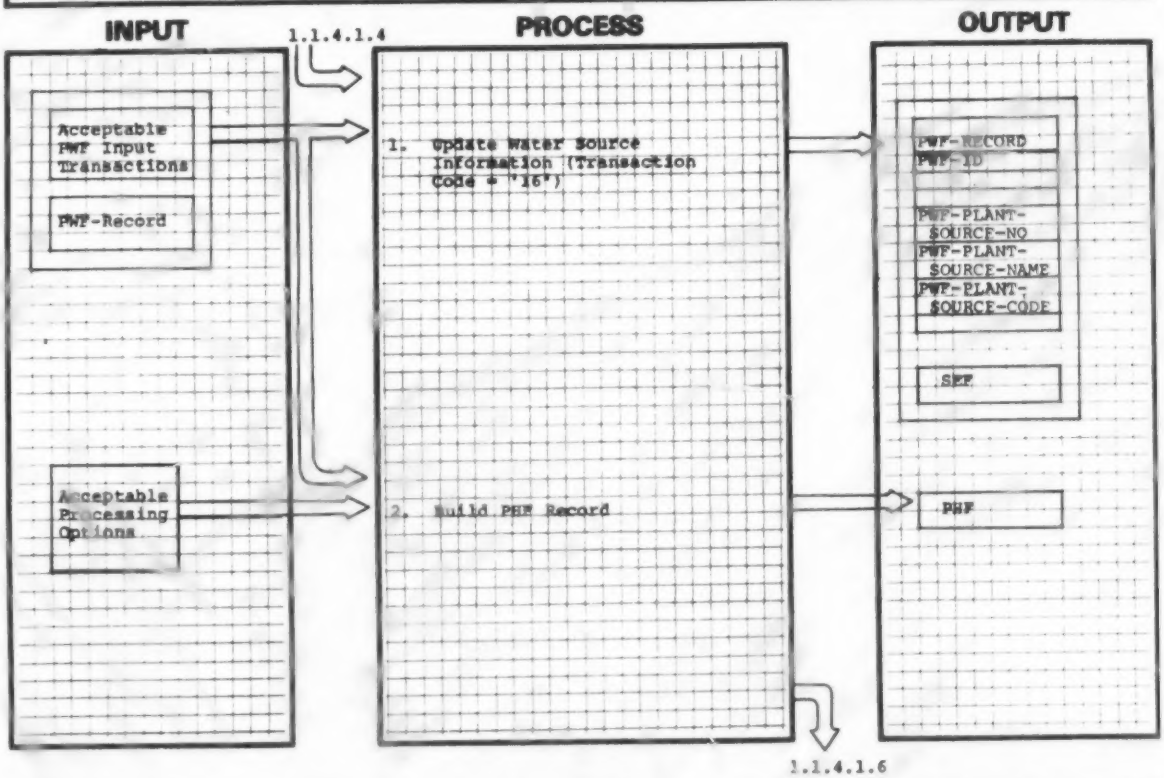


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	If the PWF-ID specified on the input transaction is not present on the Public Water File (PWF), the entire transaction is in error and is written to the Standard Error File (SEF).			
2	As each data element is updated, a Public History File (PHF) record is built. This includes PHF records, for changes to the chemical follow-up monitoring section, if any.		PWSI010	202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 of 2

Diagram No.: 1.1.4.1.5 **Description:** Update Water Source Information



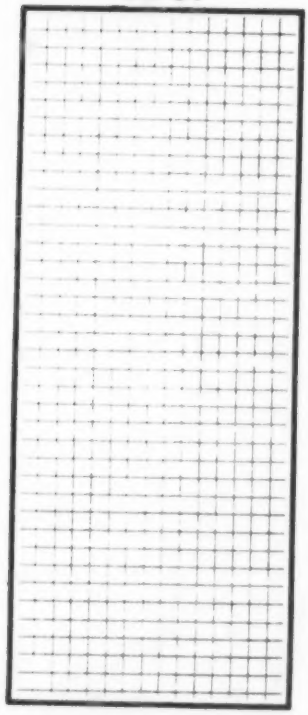
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction Code = '16' allows updating of Water Source Information of the Public Water File (PWF) Record. This information is stored in an array occurring in the variable part of the PWF record, up to a maximum of fifteen times. If the occurrence number on the input transaction is less than or equal to the number of sources currently contained on the PWF record (PWF-PLANT-SOURCES-NUMBER), the source information specified by that occurrence number is updated. If the source code specified on the input transaction equals "Z", that source should be deleted by reinitializing all data element values within that source as well as setting a source deletion program control flag. If the occurrence number on the input transaction is greater than the number of sources currently contained on the PWF record, the source information specified by that occurrence number is added to the next available position, which may not be the position specified by occurrence number, as well as incrementing PWF-PLANT-SOURCES-NUMBER by 1. After processing all source information for a given PWS, the variable part of the record is "compressed", by removing the reinitialized elements and decrementing PWF-PLANT-SOURCES-NUMBER. If the PWF-ID specified on the input transaction is not present on the PWF, the entire transaction is in error and is written to the Standard Error File (SEF).		PWSI010	200 229 MSIS. 207

MODEL STATE INFORMATION SYSTEM

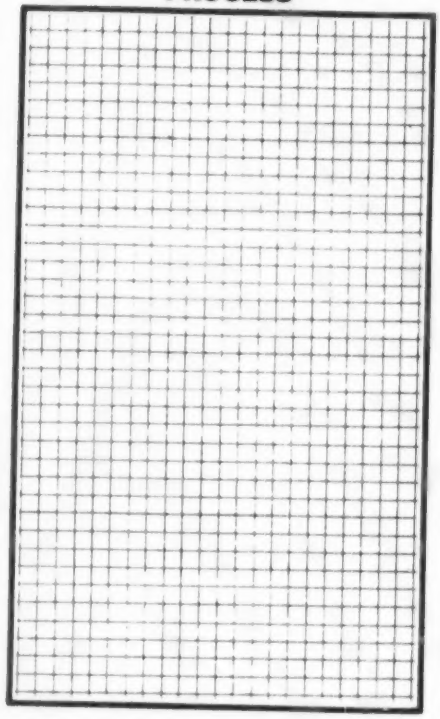
Diagram Type: Detail Subsystem: Public Water System Inv. Date: 3-2-77 Page: 2 of 2

Diagram No.: 1.1.4.1.5 Description: Update Water Source Information

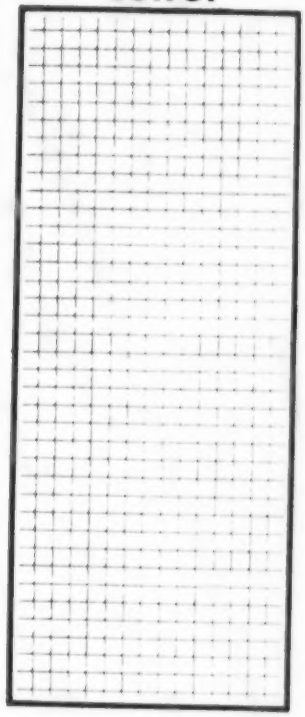
INPUT



PROCESS



OUTPUT

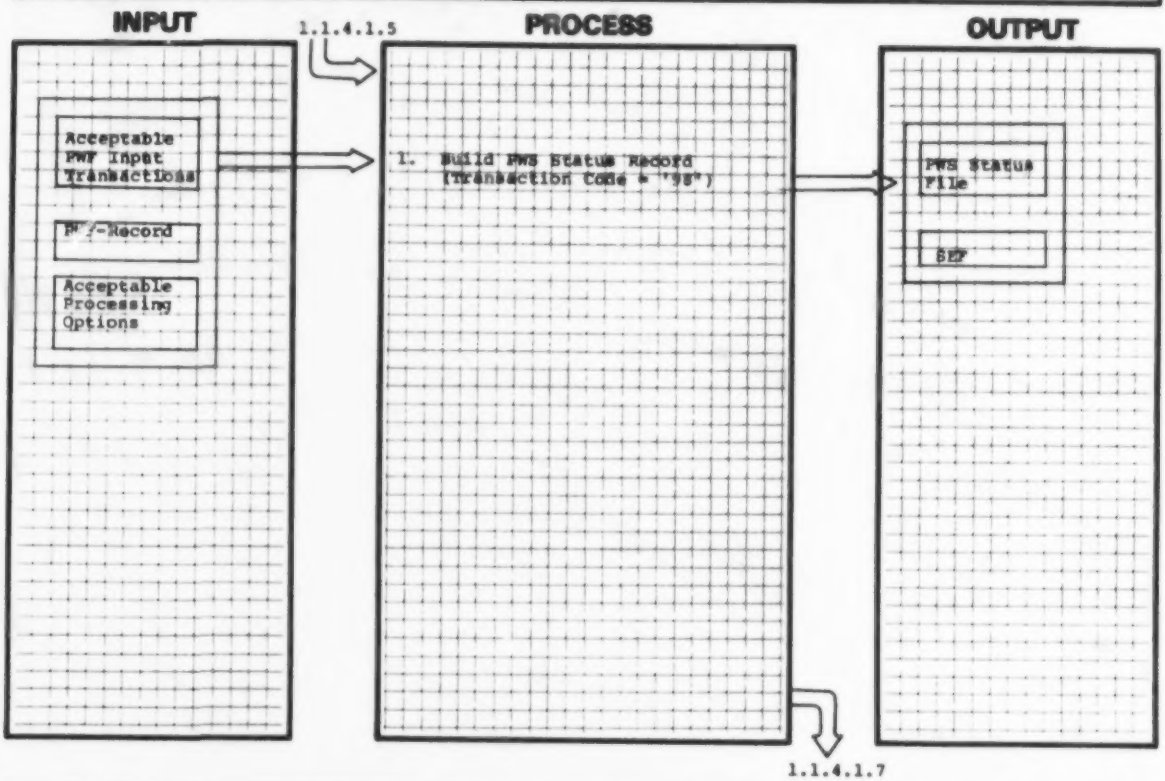


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	As each data element is updated, a Public History File (PHF) record is built. If a source was deleted (source code = "Z") build a single PHF record, using the data element code of PWF-PLANT-SOURCE-NAME, PHF-OLD-VALUE equal to the PWF-PLANT-SOURCE-NAME and PHF-NEW-VALUE = '**SOURCE DELETED**'. NOTE: Do not allow all sources for a PWF to be deleted. The transaction which would delete the last source is in error and should be written to the SEF.		PWSI010	202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv Date: 3-2-77 Page: 1 of 1

Diagram No.: 1.1.4.1.6 Description: Build PWS Status Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction Code = '98' allows the user to request the status of a particular Public Water File (PWF) Record. This is done by selecting the PWF Record and writing it to the PWS Status File which will subsequently be used as input to the PWS Comprehensive Report Program (module PWSI060). If the requested PWF Record was just updated by other input transactions in this run, obtain the PWSI-LAST-UPDATE-DATE from the acceptable processing options, not the date on the record as it will be updated later (See HIPO 1.1.4.2.3). If the PWF-ID specified on the input transaction is not present on the PWF, the entire transaction is in error and is written to the Standard Error File (SEF).		PWSI010	200 213 MSIS. 207

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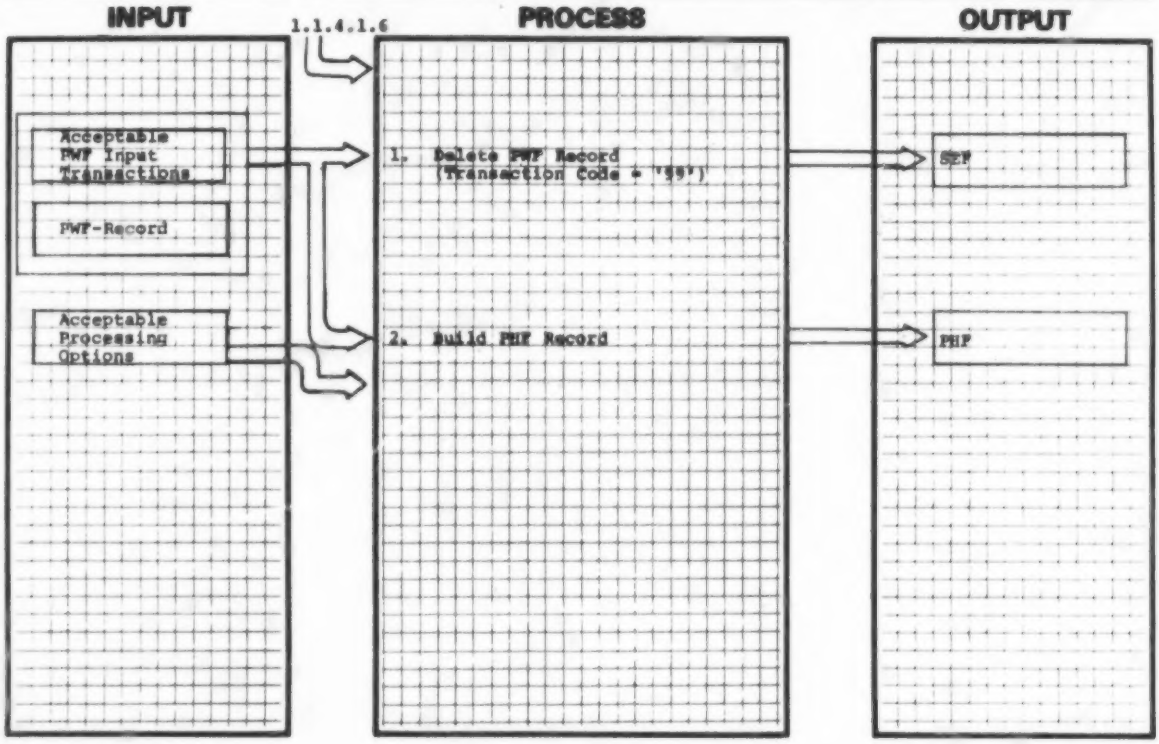
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 **of** 1

Diagram No.: 1.1.4.1.7 **Description:** Delete PWF Record

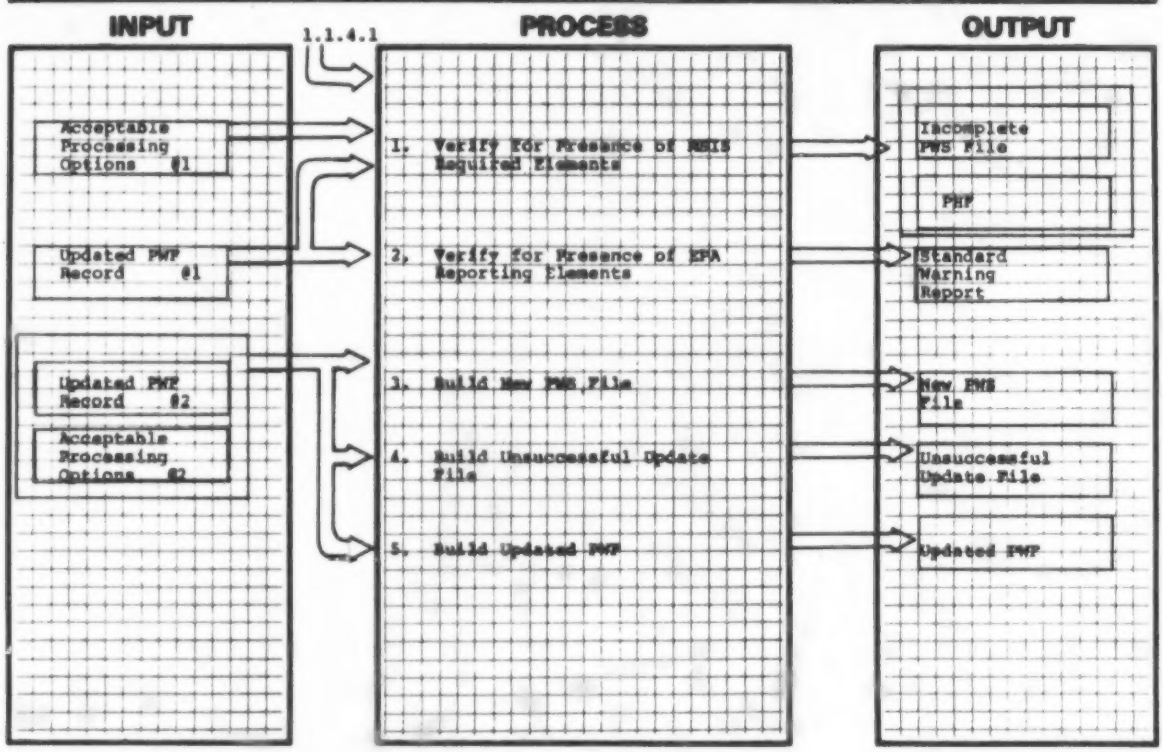


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction Code = '99' allows the user to delete a record from the Public Water File (PWF). The record may only be deleted if PWF-PLANT-ACTIVITY = 'I' (deactivated). The deactivation may have occurred in this run or in a previous run. If PWF-PLANT-ACTIVITY is not equal to 'I' or if the PWF-ID specified on the input transaction is not present on the PWF, the entire transaction is in error and is written to the Standard Error File (SEF).		PWSI010	200 213 MSIS. 207
2	Build a single Public History File Record for the deleted PWS Record. Use Data Element Code = '999', Old Value = 'RECORD DELETED' and New Value equal blanks.		PWSI010	202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Public Water System Inv. Date: 3-2-77 Page: 1 of 1

Diagram No.: 1.1.4.2 Description: Verify Updated PWF Record

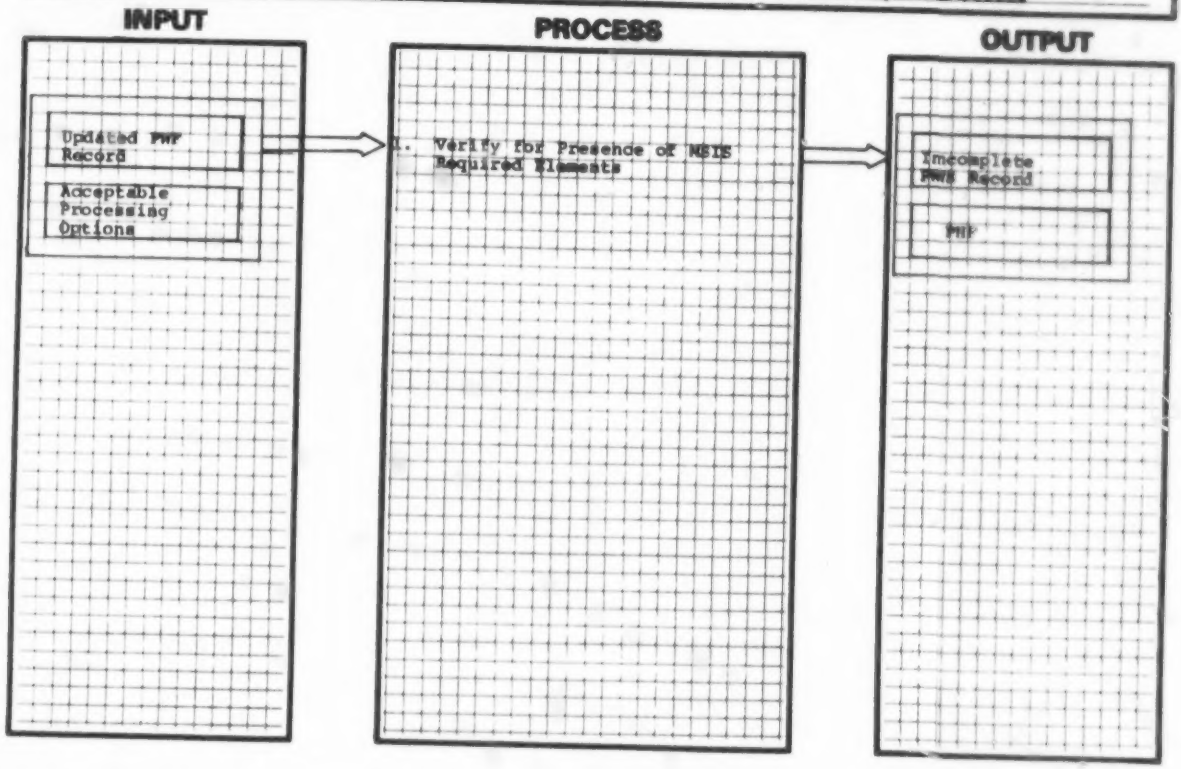


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify for the presence of those elements required for MSIS Processing on any new Public Water File (PWF) Record. A Public History File (PHF) record is created using 'LOW VALUES' for a new PWF that was incomplete.	1.1.4.2.1	PWSI010	
2	Verify for the presence of those elements necessary to report to EPA on any new PWF record.	1.1.4.2.2	PWSI010	
3	Build the New PWS File from the updated PWS records if specified by the Processing Options.	1.1.4.2.3	PWSI010	
4	Build the Unsuccessful Update File from the PWS records if specified by the Processing Options.	1.1.4.2.4	PWSI010	
5	Build the Updated PWF from the updated PWF records.	1.1.4.2.5	PWSI010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 2-2-77 **Page:** 1 of 1

Diagram No.: 1.1.4.2.1 **Description:** Verify for Presence of MSIS Required Fields

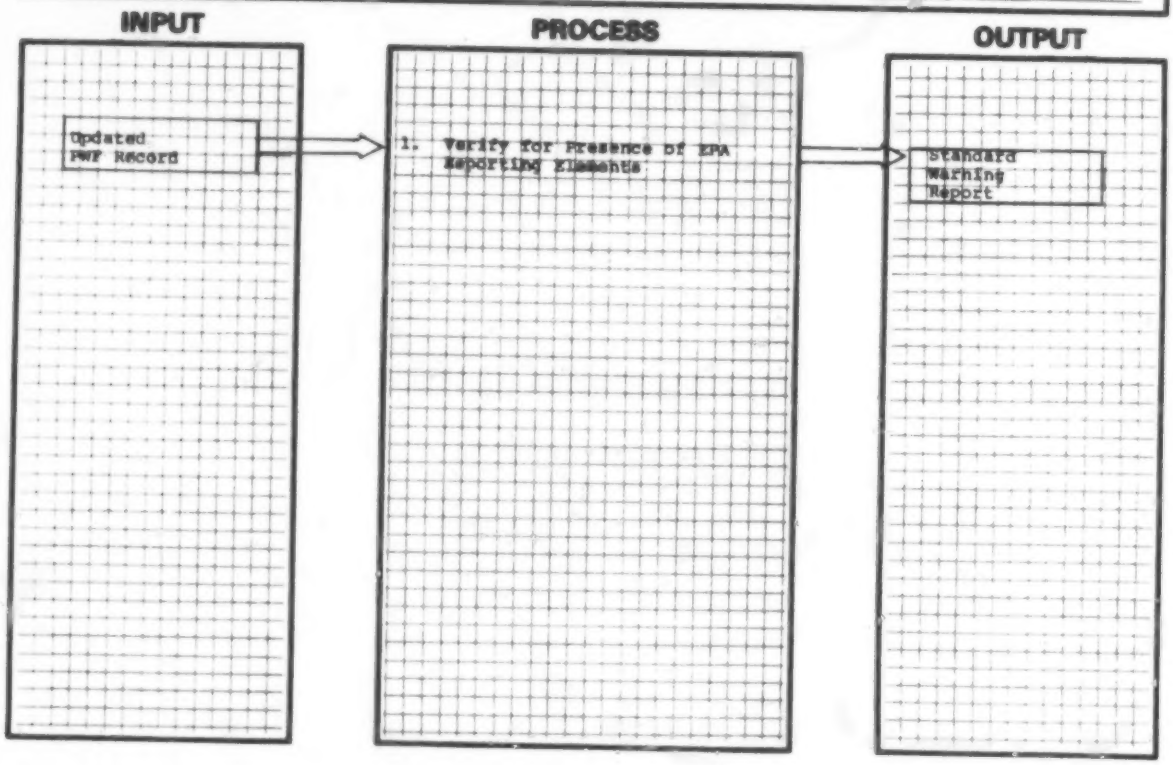


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify that those elements necessary for MSIS processing are present if the Public Water File (PWF) Record was just created with a '00' transaction. After examining all fields, if any were missing, write the record to the Incomplete PWS File, set a program control flag to suppress writing the record to the PWF and write a Public History File (PHF) record using 'LOW VALUES' for data element catalogue number and PWS-ID record ID.		PWSI010	200 213 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 3-2-77 Page: 1 of 1

Diagram No.: 1.1.4.2.2 Description: Verify for Presence of EPA Reporting Fields

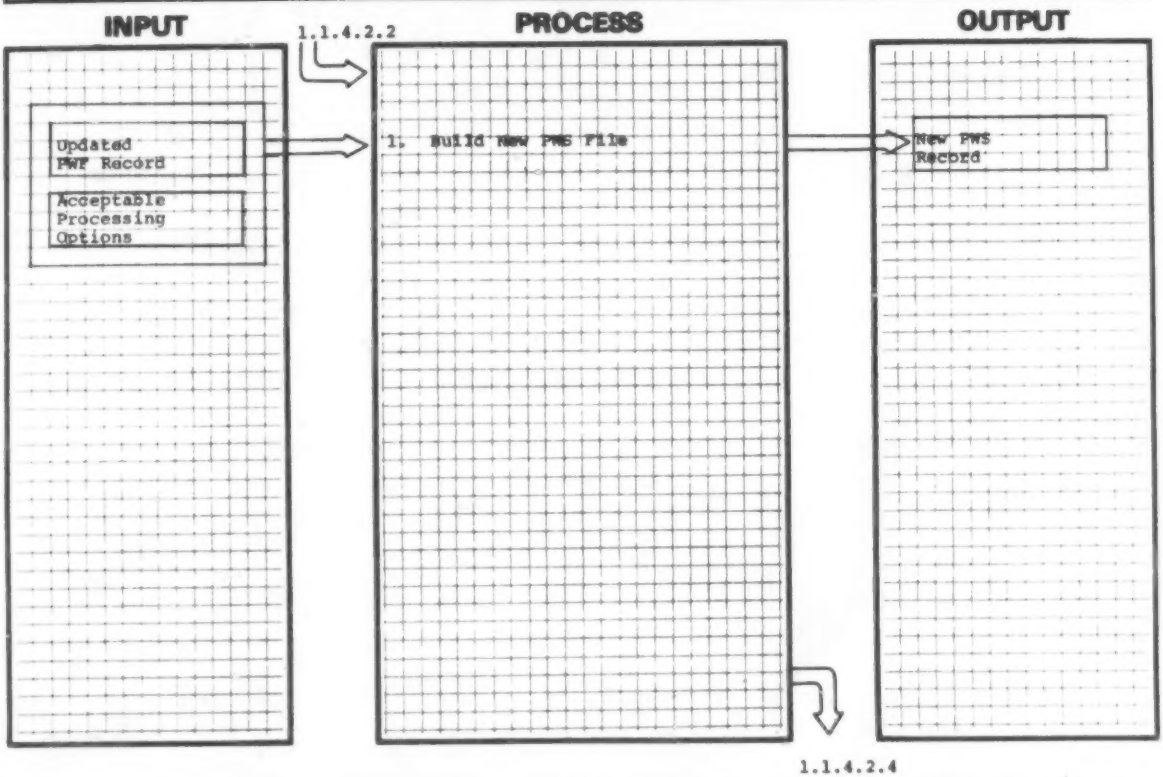


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify that those elements necessary for EPA reporting are present, if the Public Water File (PWF) Record was just created with a '00' transaction and passed the verification of MSIS required elements. For each element not present, produce a message on the Standard Warning Report.		PWSI010	213 MSIS. 310 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 3-2-77 **Page:** 1 **of** 1

Diagram No.: 1.1.4.2.3 **Description:** Build New PWS File

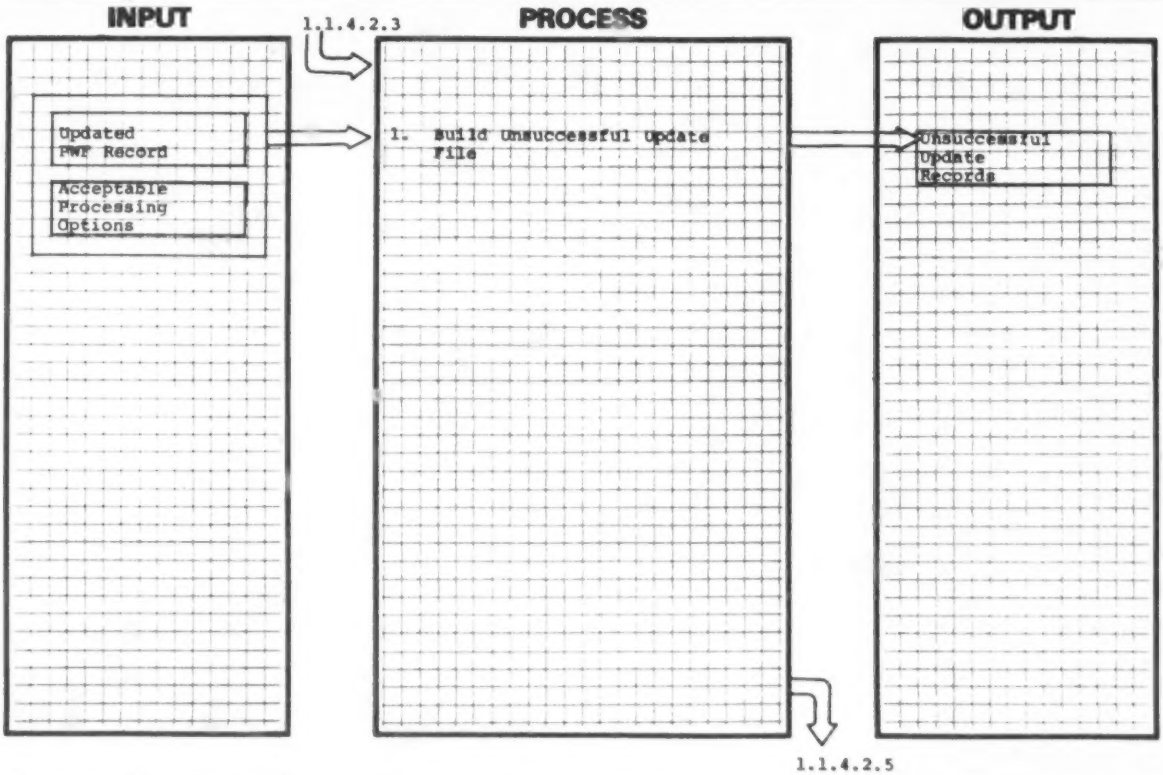


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the Processing Options so specify, build a New Public Water System (PWS) Record. This is done if the Public Water File (PWF) Record was just created with a '00' transaction and passed the verification of MSIS required elements. Be sure to set the last update date in the New PWS Record equal to the current date from the 'PROC' record.		PWSI010	200 213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 1.1.4.2.4 **Description:** Build Unsuccessful Update File

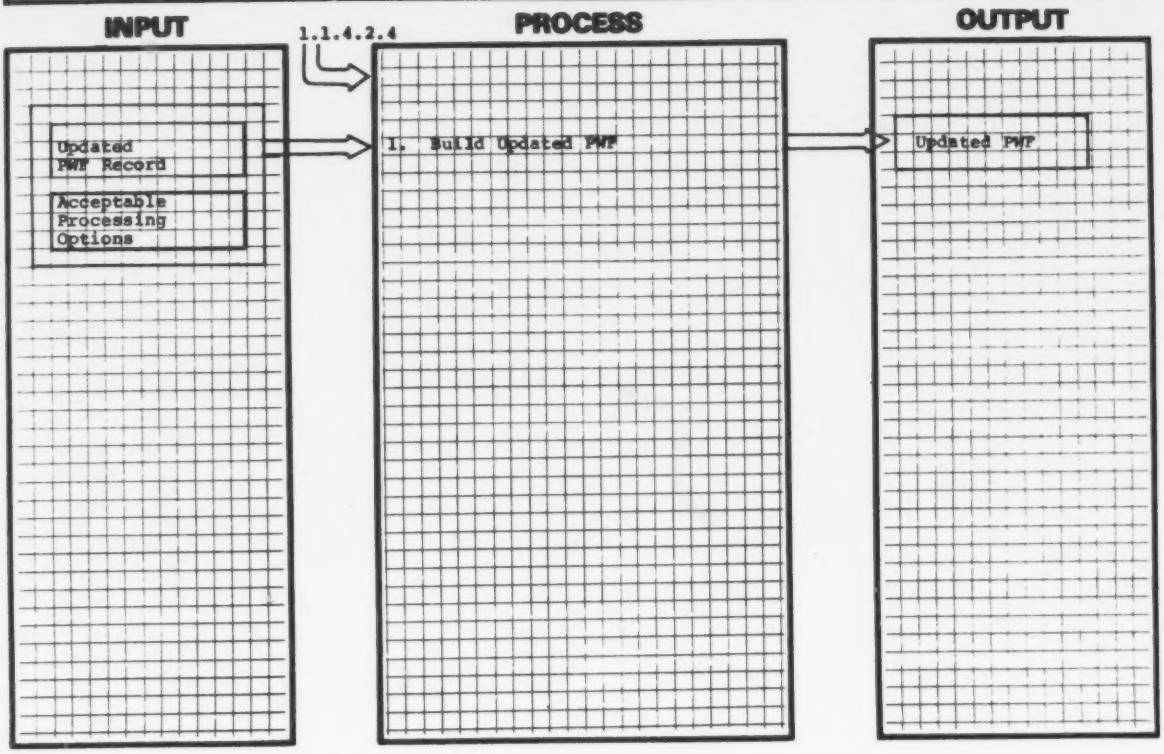


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the Processing Options so specify, build an Unsuccessful Update Record. This is done if an input transaction had any field in error and could not be used to update the current Public Water File (PWF) Record, even though some of the updates may have been applied. The Unsuccessful Update Record is in the same format as the PWF Record.		PWSI010	200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 3-2-77 Page: 1 of 1

Diagram No.: 1.1.4.2.5 Description: Build Updated PWF

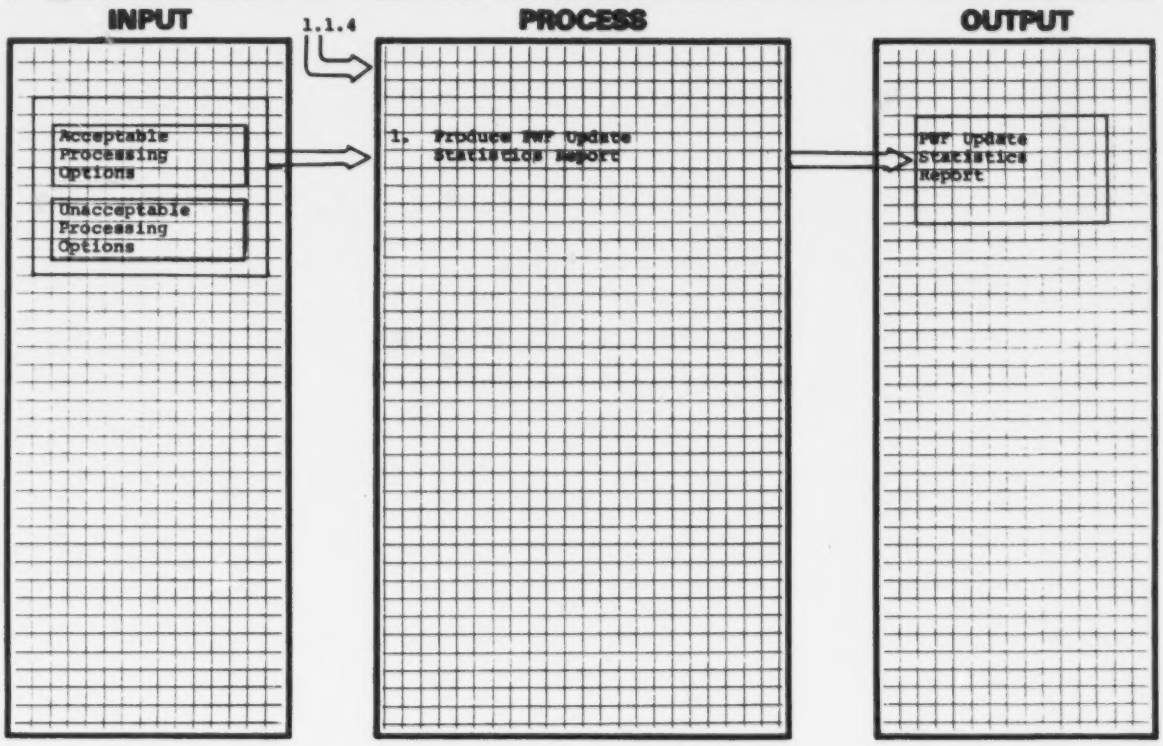


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Updated Public Water File (PWF) record may now safely be written to the Updated PWF, if all conditions for writing were met. If an update actually occurred, set the last update date on the record equal to the current date obtained from the 'PROC' record.		PWSI010	200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 3-2-77 Page: 1 of 1

Diagram No.: 1.1.5 Description: Update PWF (PWSI010)



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The PWF Update Statistics Report is always produced. The following two formats may be used: a. The PWF Update Statistics Report contains: 1. Totals which were accumulated during the update process: (a) Total number of records originally on the file (b) Total number of acceptable data entry transactions (c) Total number of standard error records created (d) Total number of records modified on the file (e) Total number of new records added to the file (f) Total number of deactivated records on the file (g) Total number of records now on the file (h) Total number of records deleted this run (i) Total number of records now on the file (j) Total number of new PWS records (k) Total number of incomplete PWS records (l) Total number of PWS Status Records (m) Total number of Unsuccessful Update records 2. Totals (d) thru (f), (h) and (i) are computed as a percent of (a). b. If any Processing Options are in error, the records and associated error messages may be produced instead of, or along with, the totals in 1.a.		PWSI010	312 MSIS. 309

NARRATIVE

SUBSYSTEM: Public Water System Inventory
PROGRAM NAME: PWSI020
DATE: February 8, 1977

I. OBJECTIVES:

The objective of this program is to search the Public Water File (PWF) and select records to produce any or all four (4) of the following reports:

1. Condensed Report (PWSI030)
2. Production and Capacity Data Report (PWSI040)
3. State Discretionary Data Report (PWSI050)
4. Comprehensive Report (PWSI060) or Status and Entry Form (Turnaround Document)

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public Water File	PWF-RECORD	PWSI.200
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	PWFI-PROC-RECORD	PWSI.113	PWSI.238
2.	Selection Form (SEL1)	PWFI-SELECT-1-RECORD	PWSI.107	PWSI.236
3.	Selection Form (SEL2)	PWFI-SELECT-2-RECORD	PWSI.108	PWSI.237

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public Water Type File	PWF-RECORD	PWSI.200

2.	PROC Options File (PWSI030)	PWFI-PROC-RECORD	PWSI.206
3.	PROC Options File (PWSI040)	PWFI-PROC-RECORD	PWSI.206
4.	PROC Options File (PWSI050)	PWFI-PROC-RECORD	PWSI.206
5.	PROC Options File (PWSI060)	PWFI-PROC-RECORD	PWSI.204

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Selection	MSIS.312
	Statistics Report	MSIS.309

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Build the internal Data Element Table (DET) to be used in editing the Processing Options.

2. There are three (3) types of Processing Options which are edited for acceptable values and these values are retained and utilized. If any errors are detected, processing is terminated. Processing Options records are built which will be used by programs PWSI030, PWSI040, and PWSI060 to determine which of those reports to produce.

3. The Public Water File (PWF) is searched to select records according to established criteria in the Processing Options.

4. The Standard Selection Statistics Report is produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

2. Selection Form--Definition of Data Elements

3. Selection Form--Definition of Logic for Selection

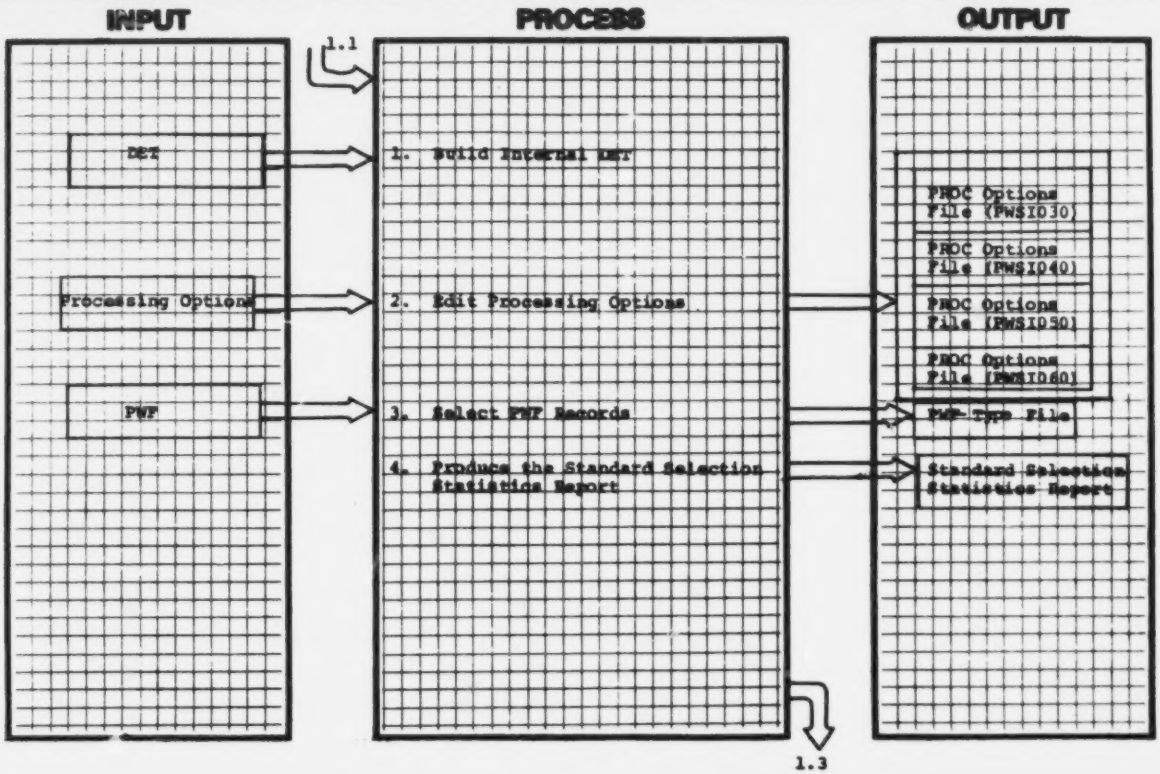
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Public Water System Inv. Date: 2/8/77 Page: 1 of 1

Diagram No.: 1.2 Description: Select PWF Records (PWSI020)

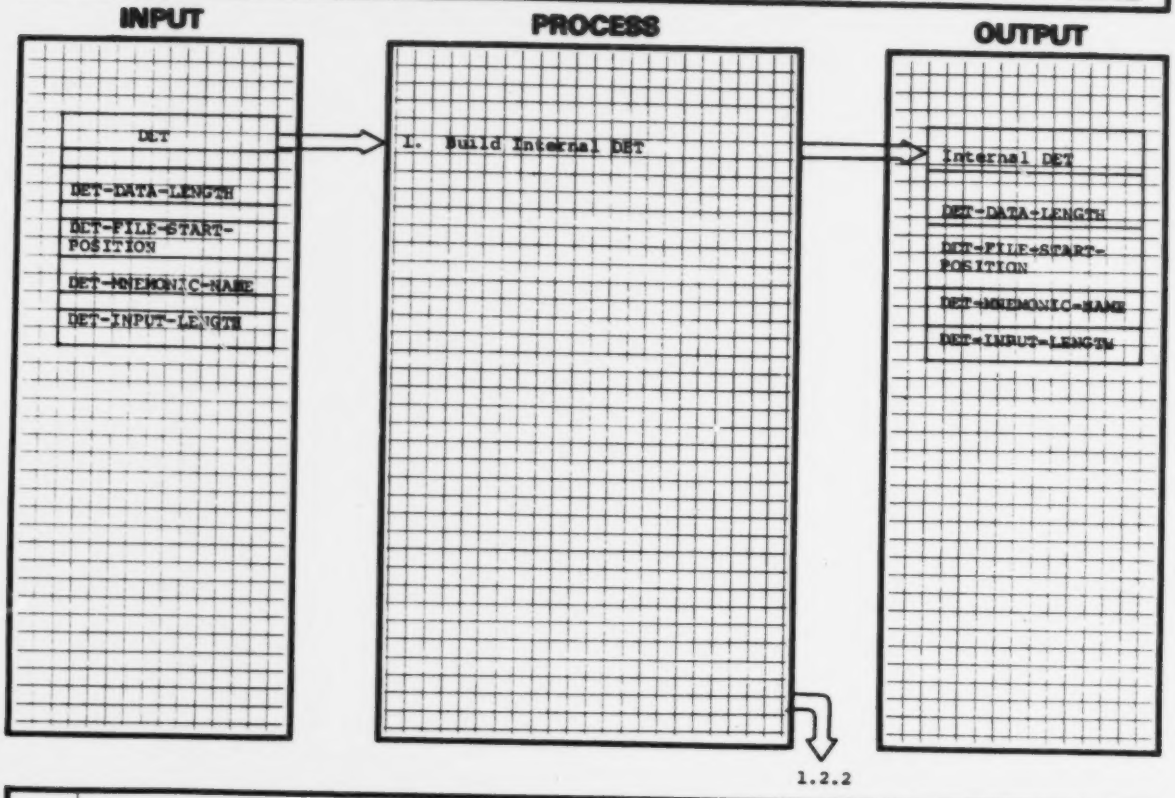


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Data Element Table (DET)	1.2.1	PWSI020	
2	Edit Processing Options: Processing Options (PROC) Selection Form (SEL1) Selection Form (SEL2) and build Processing Options files to be used to determine which report to produce.	1.2.2	PWSI020	
3	Using the criteria established on the Processing Options, select Public Water File (PWF) records to build the PWF-Type File.	1.2.3	PWSI020	
4	Produce the Standard Selection Statistics Report and this will also show any Processing Options in error.	1.2.4	PWSI020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 2/8/77 Page: 1 of 1

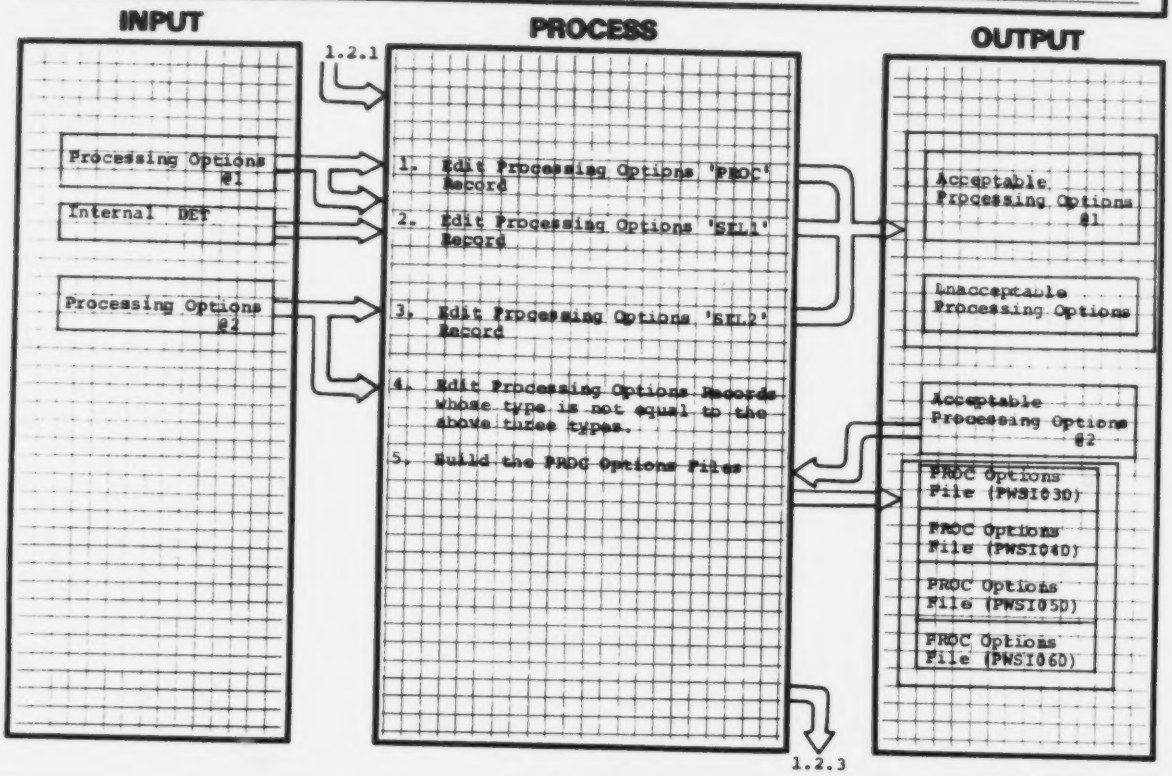
Diagram No.: 1.2.1 Description: Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of PW. Only the file start position, data element length, data element input length, and data element mnemonic are used.		PWSI020	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 2/8/77 **Page:** 1 of 1
Diagram No.: 1.2.2 **Description:** Edit Processing Options

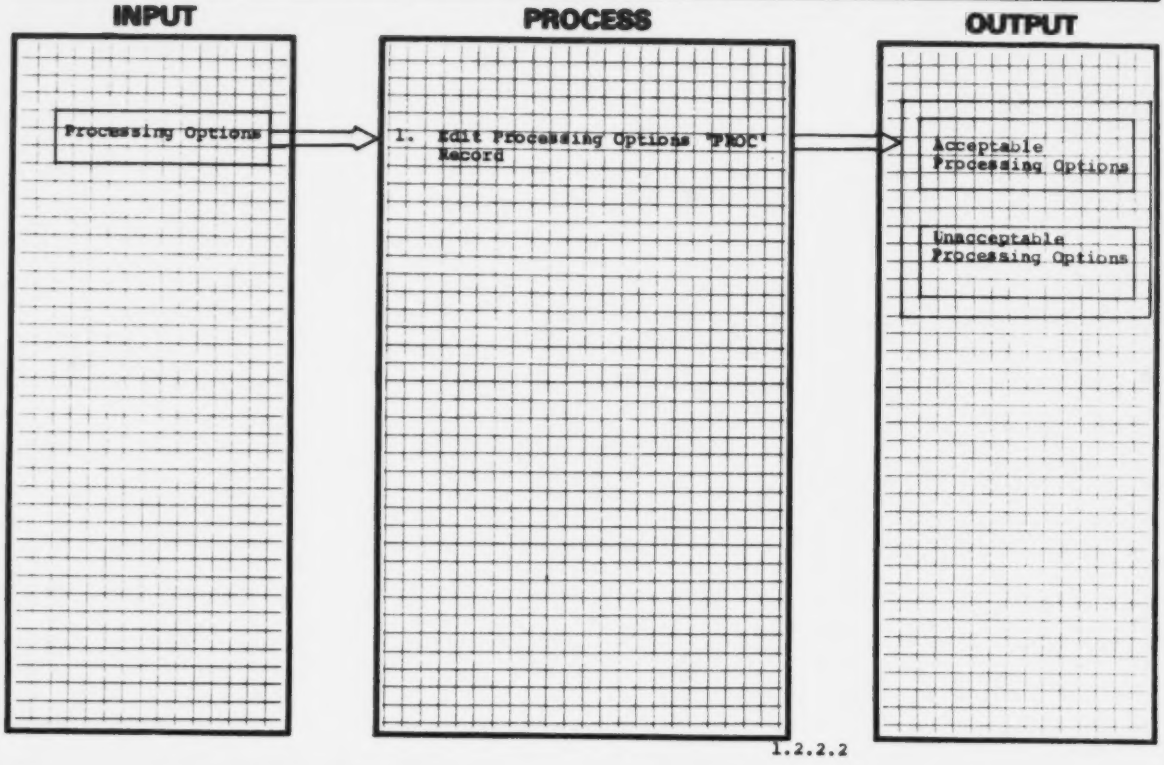

INPUT
PROCESS
OUTPUT
1.2.1
Processing Options #1
Internal DET
Processing Options #2
1. Edit Processing Options 'PROC' Record
2. Edit Processing Options 'SEL1' Record
3. Edit Processing Options 'SEL2' Record
4. Edit Processing Options Records whose type is not equal to the above three types.
5. Build the PROC Options Files
Acceptable Processing Options #1
Unacceptable Processing Options
Acceptable Processing Options #2
PROC Options File (PWSI03D)
PROC Options File (PWSI04D)
PROC Options File (PWSI05D)
PROC Options File (PWSI06D)
1.2.3

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record which has 'PROC' in positions 1-4 of the record.	1.2.2.1	PWSI020	
2	Edit the Processing Options record which has 'SEL1' in positions 1-4 of the record.	1.2.2.2	PWSI020	
3	Edit the Processing Options record which has 'SEL2' in positions 1-4 of the record.	1.2.2.3	PWSI020	
4	If the Processing Options record does not fall into one of the above categories, then it is an invalid record and should be shown as an error.	1.2.2.4	PWSI020	
5	After the edit criteria has been established for the 'PROC' record, the PROC options files are built.	1.2.2.5	PWSI020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 2/8/77 **Page:** 1 **of** 1

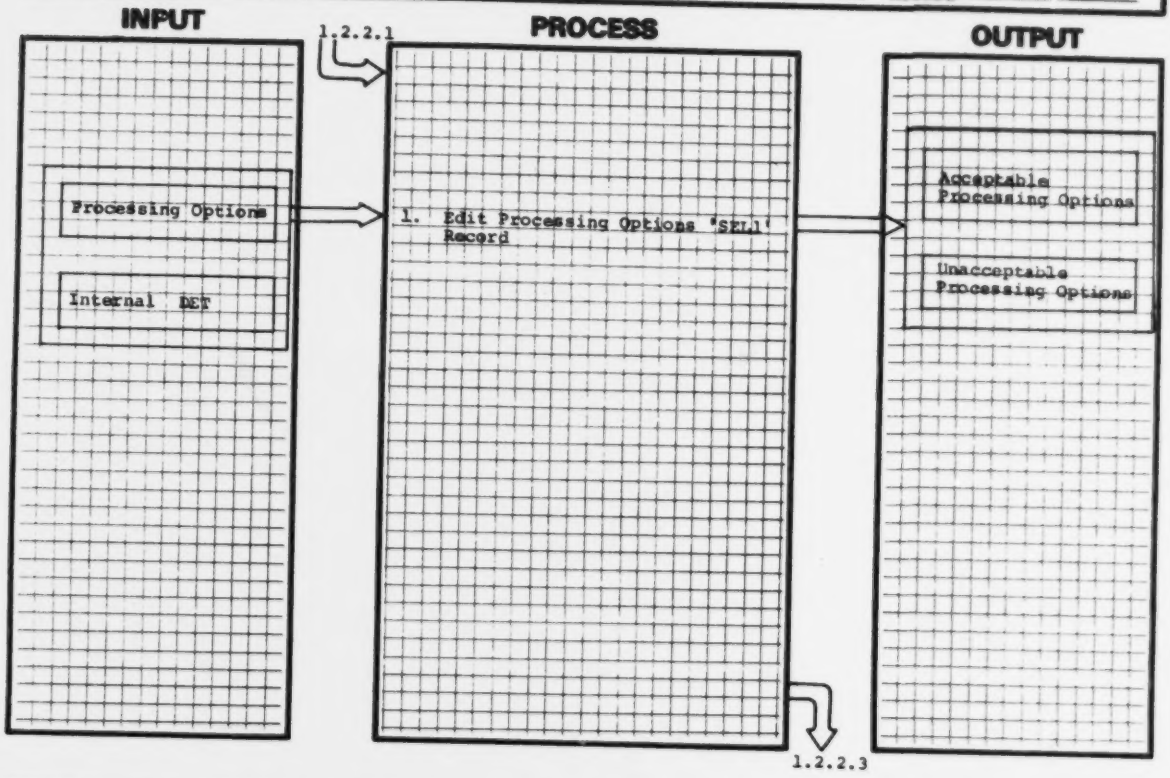
Diagram No.: 1.2.2.1 **Description:** Edit Processing Options 'PROC' Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record for 'PROC' as follows: a. Date (month, day, year) must be a valid date. This date is used in producing the report(s). b. Positions 14-16 indicate if a report is to be printed by PWSI030, PWSI040, or PWSI050. A "Y" or "N" is used to determine the types of report: Position 14-Condensed Report (PWSI030) Position 15-Production and Capacity Data Report (PWSI040) Position 16-State Discretionary Data Report (PWSI050) c. Position 17 indicates the type of report option to be selected from PWSI060. A "1" in position 17 indicates no report is to be produced. A "2" in position 17 indicates the Public Water System Status and Entry Form (turnaround document) is to be produced. A "3" in position 17 indicates the Comprehensive Report (computer stock listing) is to be produced. An error exists if: a) no 'PROC' record exists; b) the date is invalid; c) if there is more than one 'PROC' record, in which case the second 'PROC' record is in error. The default option for positions 14-17, if the Processing Options are blank or invalid is not to produce that report. If any errors are encountered on the above, processing is terminated after all editing is done and all the PROC Files have been built.	1.2.2.1	PWSI020	238 113

MODEL STATE INFORMATION SYSTEM

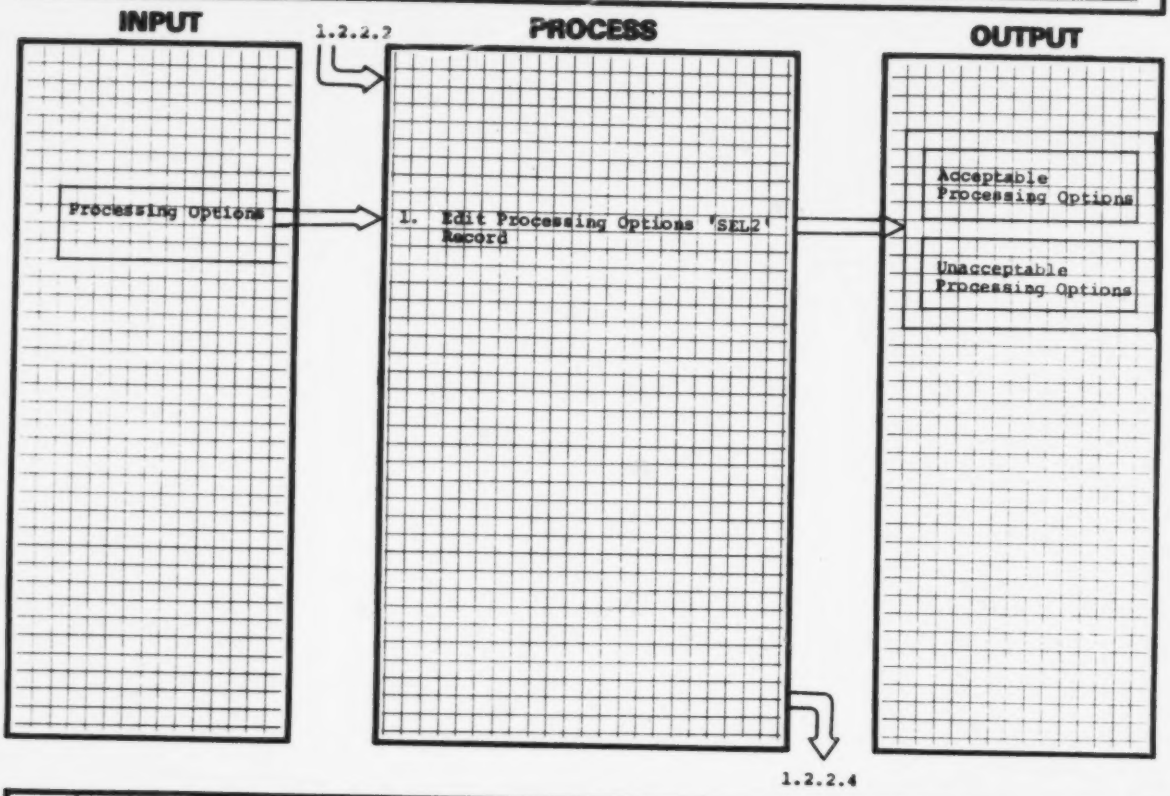
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 2/8/77 **Page:** 1 of 1
Diagram No.: 1.2.2.2 **Description:** Edit Processing Options 'SEL1' Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL1' in positions 1-4 of the records as follows: a. PWFI-SELECT-1-MNEMONIC, positions 5-14, must equal one of the mnemonic names on the record layout for the Public Water File (PWF). This edit is hard coded into the program. b. PWFI-SELECT-1-DE-VALUE, positions 15-29, must have blanks in positions (DET-INPUT-LENGTH plus 15) to 29 where DET-INPUT-LENGTH is the length of a data element associated with the mnemonic name matched in 1.a. above. Positions 15 to (DET-INPUT-LENGTH plus 14) 29 must be either numeric or alpha-numeric as specified by the Data Element Dictionary (DED) for that particular element. Additionally, if the data element is a date, it is checked for validity and then converted to Julian for comparison purposes. If the PWFI-SELECT-1-DE-VALUE is numeric, contains a decimal point, and the associated PWFI-SELECT-1-MNEMONIC references a decimal number (refer to the DED for these elements), then move the PWFI-SELECT-1-DE-VALUE to a 15 position alphanumeric field for comparison purposes, placing the decimal in position 6 and replacing all blanks with zeros. c. PWFI-SELECT-1-DE-NO, positions 30-31, must be a number from 01 to 35 and must be a different number from all other 'SEL1' records. If there are no 'SEL1' records or if an error exists on any 'SEL1' record, then the record is in error and will be written on the Standard Selection Statistics Report. Appropriate error messages for the 'SEL1' Processing Options record may be found referencing the Error Code Instructions. If any errors exist, processing will be terminated.	1.2.1.2	PWSI020	107 236 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 2/8/77 **Page:** 1 **of** 1
Diagram No.: 1.2.2.3 **Description:** Edit Processing Options 'SEL2' Record

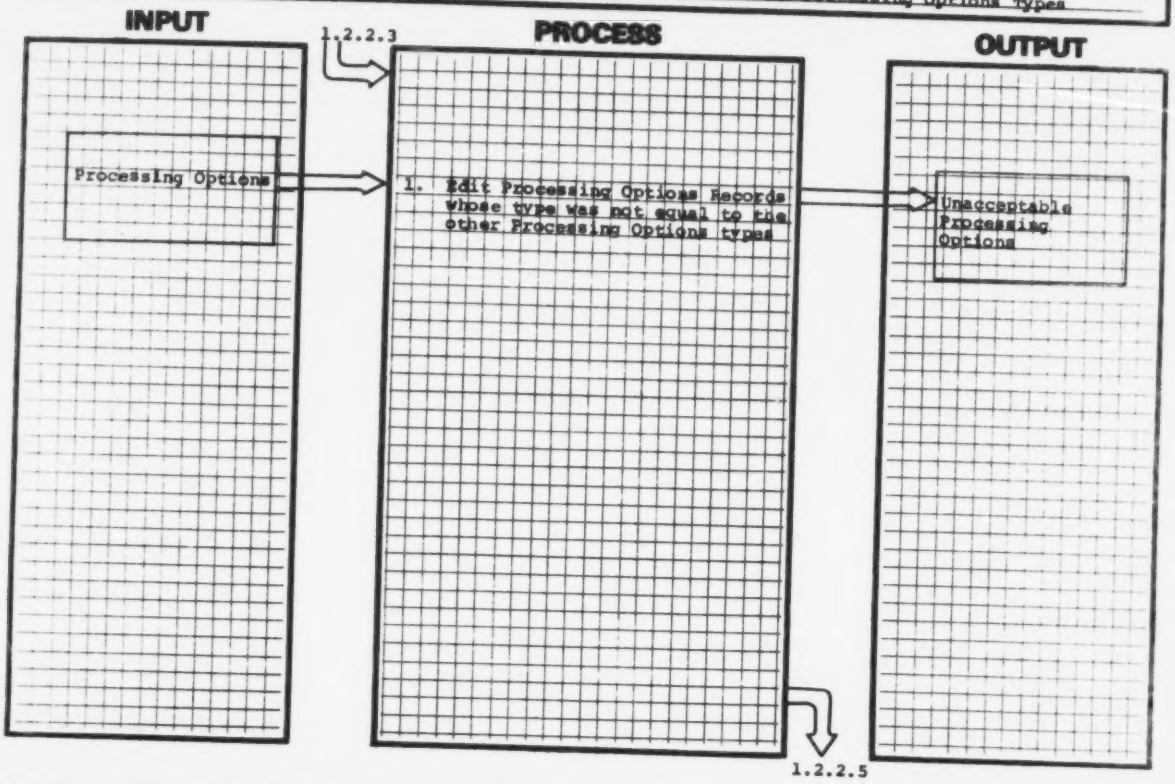


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL2' in positions 1-4 of the records as follows: a. Each non-blank PWFI-SELECT-2-SYMBOL must have a corresponding 'SEL1' record, determined by PWFI-SELECT-1-DE-NO being equal to the array position of the PWFI-SELECT-2-SYMBOL being edited. In addition, the PWFI-SELECT-2-SYMBOL must equal one of the following operational symbols: LT = less than EQ = equal to GT = greater than NL = not less than NG = not greater than NX = does not exist blank Note: If there are more than 35 'SEL2' records, if no 'SEL2' record exists, or if an error exists on a 'SEL2' record, then the record is in error and will be written on the Standard Selection Statistics Report. If any errors exist, processing will be terminated.	1.2.1.3	PWSI020	108 237

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 2/8/77 **Page:** 1 of 1

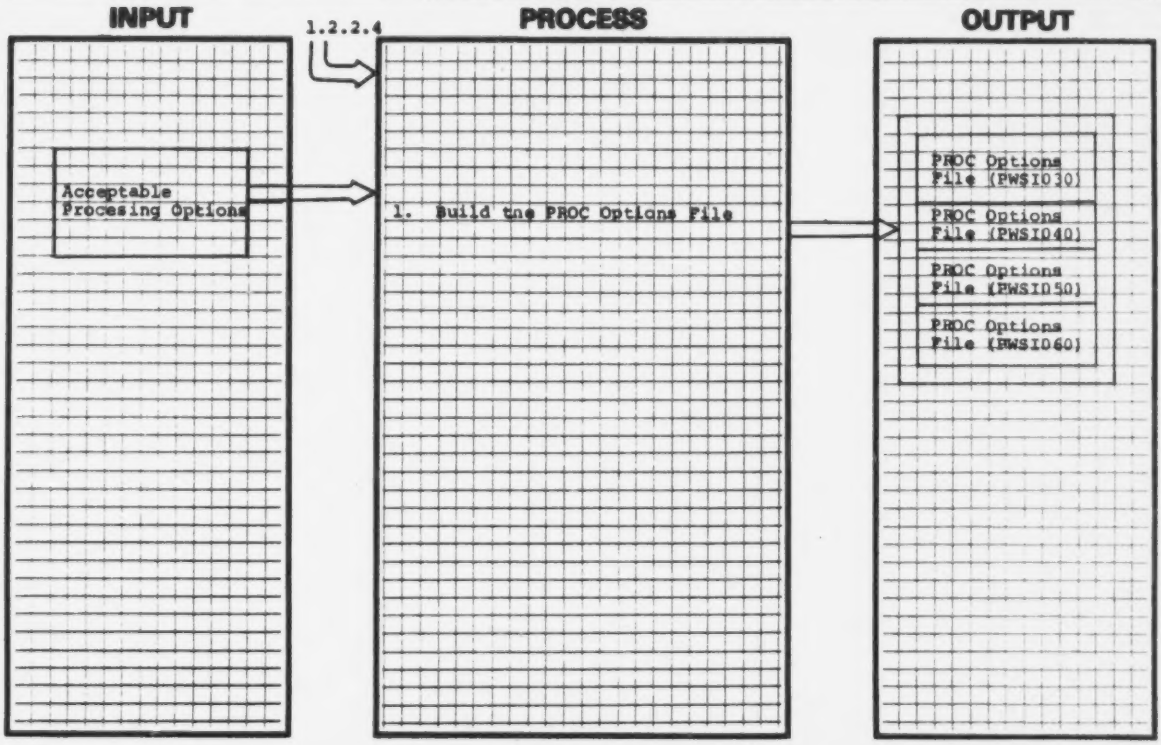
Diagram No.: 1.2.2.4 **Description:** Edit Processing Options Records whose Type Was Not Equal to the Other Processing Options Types



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit any Processing Options records which fall into this category. These Processing Options are in error and should be written to the Standard Selection Statistics Report and processing will be terminated.	1.2.2.4	PWSI020	

MODEL STATE INFORMATION SYSTEM

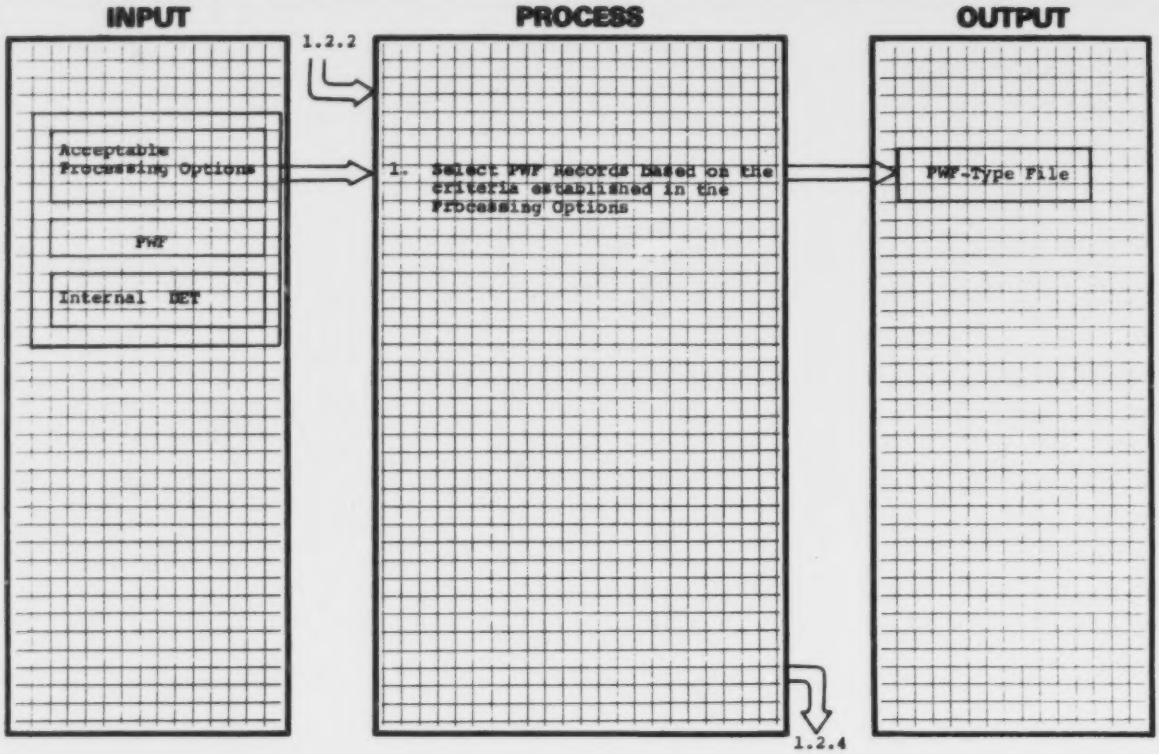
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 2/8/77 **Page:** 1 of 1
Diagram No.: 1.2.2.5 **Description:** Build the PROC Options File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build four PROC Options Files. Each file will contain only one Processing Options record on it which will determine if programs PWSI030, PWSI040, PWSI050 or PWSI060 are to be processed and reports to be produced. Each of the four records are built as follows: a. 'PROC' is moved to positions 1-4. b. The date from the Processing Options is moved to positions 5-10. c. 'N''s are moved to positions 14-17. d. If processing is to be terminated in this program, move an 'N' to position 18. Otherwise, (1) For the PROC file record for PWSI030, if position 14 from the Processing Options was a 'Y', move a 'Y' to position 18. Otherwise, move an 'N'. (2) For the PROC file record for PWSI040, if position 15 from the Processing Options was a 'Y', move a 'Y' to position 18. Otherwise, move an 'N'. (3) For the PROC file record for PWSI050, if position 16 in the Processing Options was a 'Y', move a 'Y' to position 18. Otherwise, move an 'N'. (4) For the PROC file record for PWSI060, if position 17 in the Processing Options equals "2", move a 'Y' to position 18 and 19, or if position 17 equals "3", move a 'Y' to position 18 and an 'N' to position 19. Otherwise, move an 'N' to position 18.		PWSI020	204 206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 2/8/77 Page: 1 of 1
Diagram No.: 1.2.3 Description: Select PWF Records Based on the Criteria Established in the Processing Options

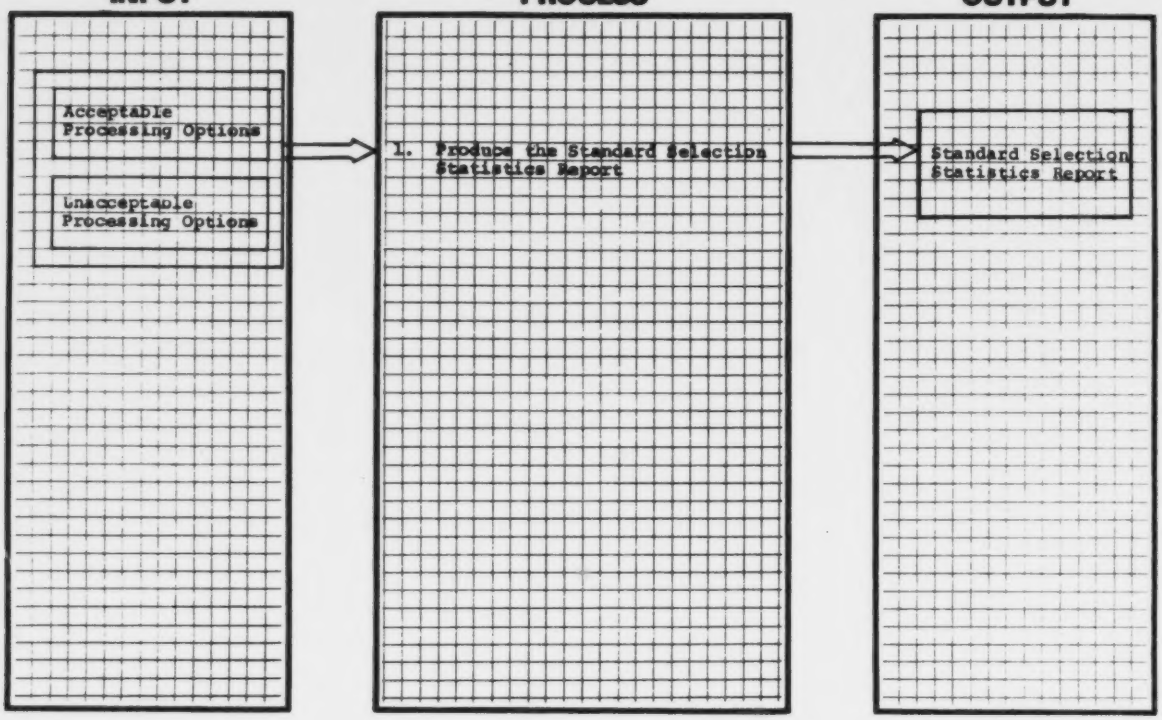


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Read a Public Water File (PWF) record. For each mnemonic name, PWFI-SELECT-1-MNEMONIC specified on the 'SEL1' records, obtain the corresponding data element value from the PWF record. If the PWFI-SELECT-1-MNEMONIC references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric position = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 If the PWFI-SELECT-1-MNEMONIC represents a value with the multiple occurrences (maintained in an array), all such values must be obtained. If the PWFI-SELECT-1-MNEMONIC represents a value with a length greater than fifteen, only obtain the first fifteen positions of the value. Using those values obtained from the PWF record, examine the logic established in each 'SEL2' record to determine if the PWF record should be selected. If the Nth PWFI-SELECT-1-DE-VALUE from the 35 position array of a 'SEL2' record is non-blank, then compare the appropriate value from a 'SEL1' record (PWFI-SELECT-1-DE-VALUE, where PWFI-SELECT-1-DE-NO = N) with the corresponding value (same mnemonic name) obtained from the PWF record. The comparison between these two values is made according to the Nth operational symbol (see HIPO 1.2.2.3). If there is no unique corresponding value (values exist in an array), then each value in the array must be compared until one satisfies the conditions of the comparison. If the PWF record meets all the above comparison criteria, then the PWF record is selected. Each PWF record is processed using all 'SEL2' records so that the selection counts are properly maintained.		PWSI020	200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 2/8/77 Page: 1 of 1

Diagram No.: 1.2.4 Description: Produce the Standard Selection Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The Standard Selection Statistics Report is always produced. The following two formats may be used: a. The Standard Selection Statistics Report contains: (1) the selection criteria (2) the total records selected under each selection criteria (3) the total of all records selected for the report (4) the percent of the file selected. b. If any Processing Options records are in error, the records and associated error messages are produced instead of or in addition to the information in a.		PWSI020	MSIS. 309 MSIS. 312

NARRATIVE

SUBSYSTEM: PUBLIC WATER SYSTEM INVENTORY
PROGRAM NAME: PWSI030
DATE: November 16, 1976

I. OBJECTIVES:

The objective of this program is to produce the Condensed Report. This report is optional and will be produced upon request.

II. INPUTS:

A. Records Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	PWF - Type File	PWF-RECORD	PWSI.200
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Record:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	PWFI-PROC-RECORD		PWSI.206
2.	SORT Options	PWFI-SORT-RECORD	PWSI.100	PWSI.239

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Condensed Report	PWSI.300
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Build the internal Data Element Table (DET) in Working Storage to be used in building the sort key.

2. Edit the following information from the Processing Options record:

   a. 'PROC' record contains a date which will appear on the report. If invalid, no date will appear on the report.

   b. Determine which one of the following will serve as input:

      New PWS Record, Incomplete PWS Records, PWS Status Requests, Records Unsuccessfully Updated, or Selection Extract file

      to determine the title of the report.

   c. The Sort record(s) will contain the sequence in which the sort key is to be built as well as the mnemonic names of the data elements to use in building the sort key and the mode of sorting, ascending or descending.

   d. The default option is to produce the report in the input sequence.

3. Based on criteria established in the Sort Options record(s), build PWF-TYPE file with a sort key. The maximum length of the key is thirty (30) positions.

4. Sort the file according to the sort key.

5. Produce the Condensed Report from the sorted file and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

   1. Processing Options

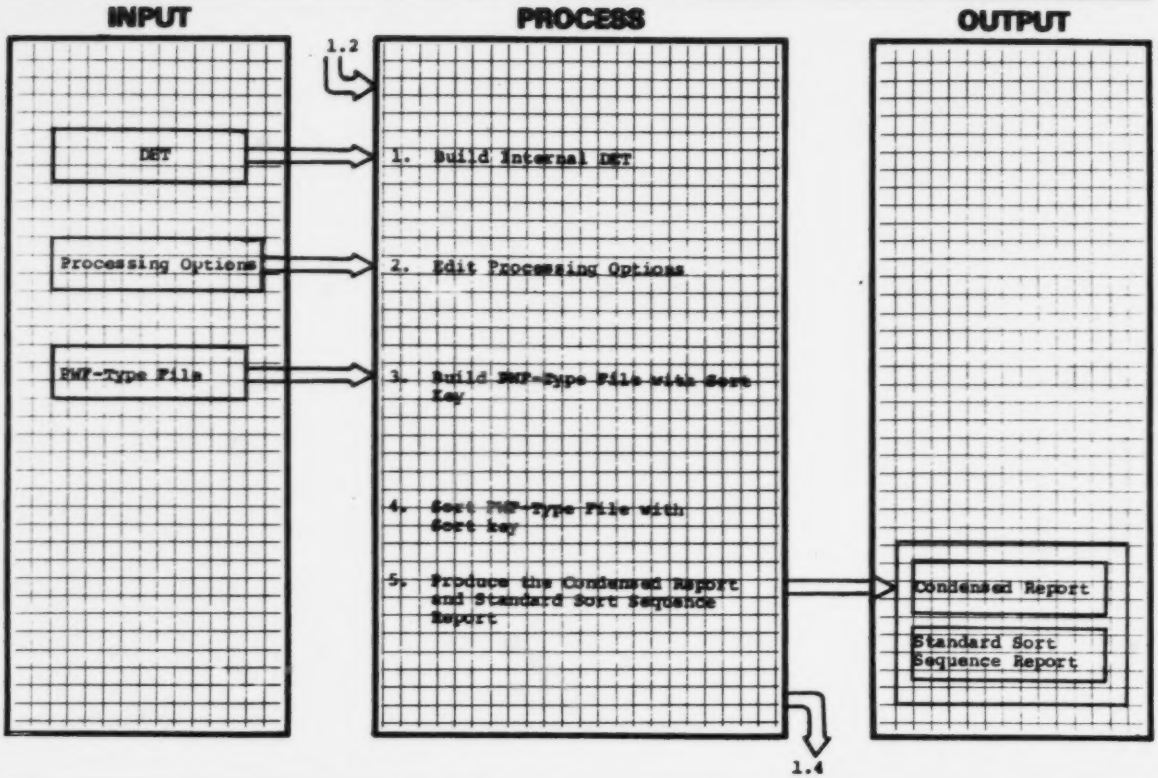
   2. Sort Processing Options form

B. Data Element Descriptions:

   Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 of 1
Diagram No.: 1.3 **Description:** Produce Condensed Report

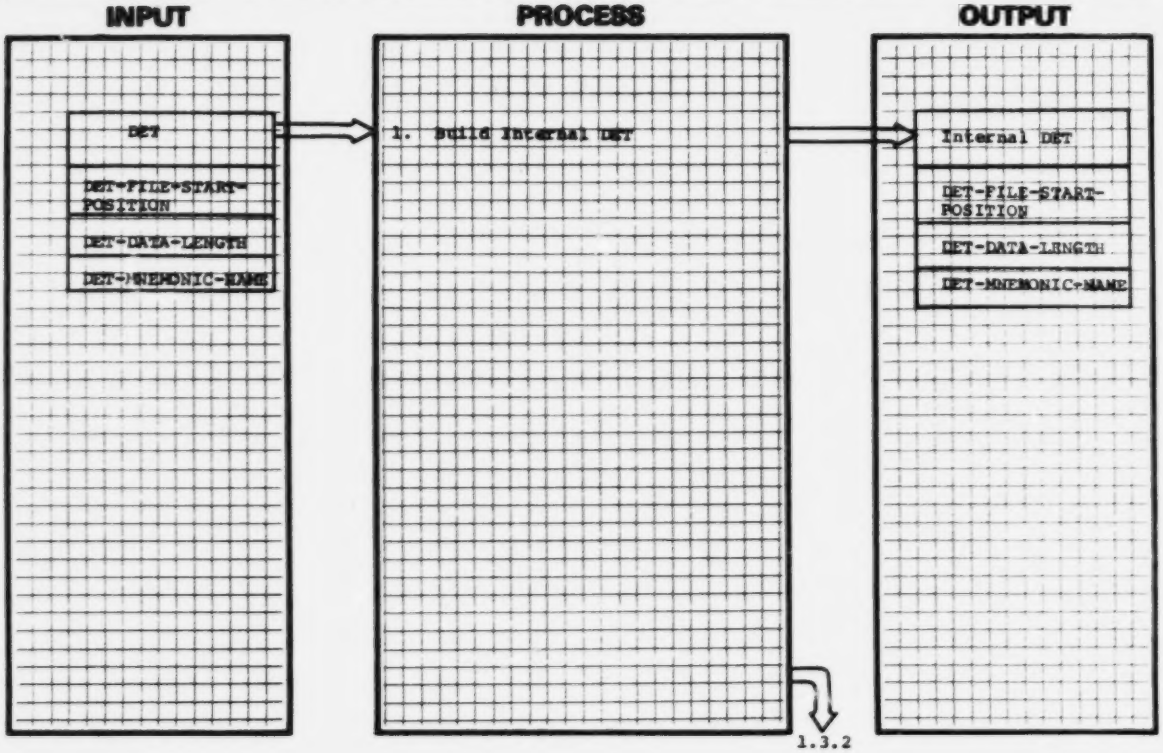


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build Internal Data Element Table (DET).	1.3.1	PMSI030	
2	Edit Processing Options and Sort Options.	1.3.2	PMSI030	
3	Build the PWF-Type File with Sort Key.	1.3.3	PMSI030	
4	Sort the PWF-Type file with Sort Key.	1.3.4	PMSI030	
5	Produce the Condensed Report and Standard Sort Sequence Report.	1.3.5	PMSI030	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 11-16-76 Page: 1 of 1

Diagram No.: 1.3.1 Description: Build Internal DET

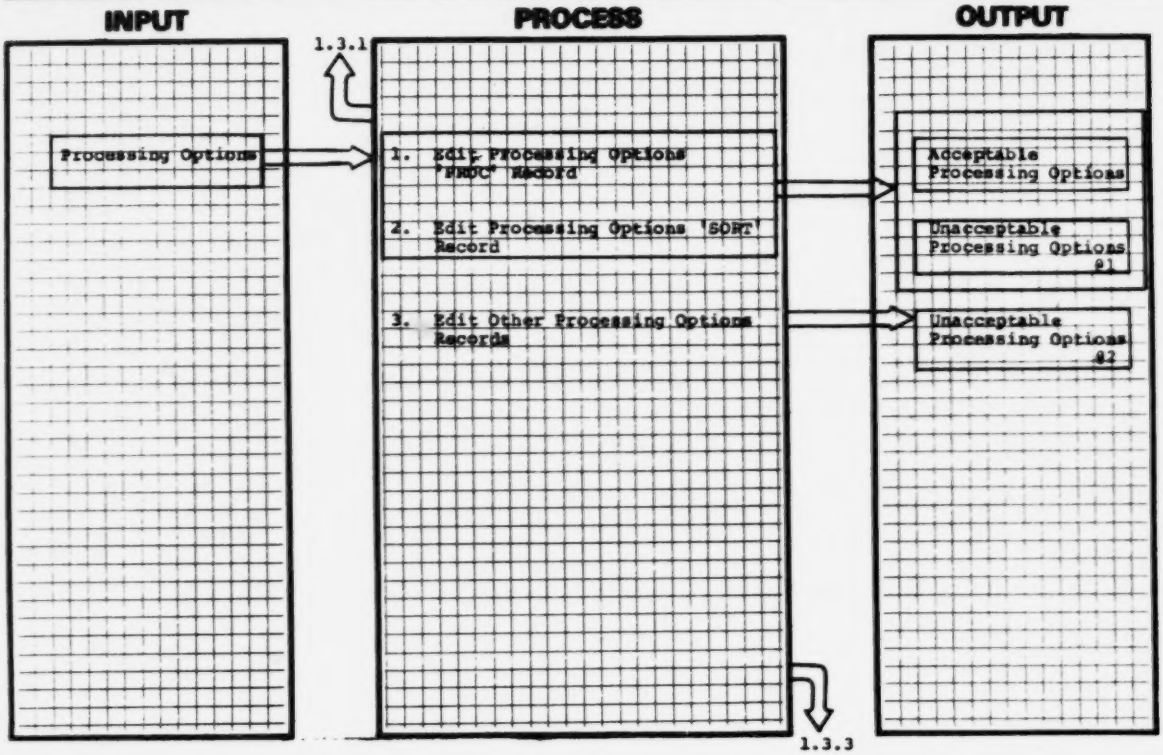


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of PW. Only the file start position, data element length, and data element mnemonic are used.		PWSI030	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Public Water System Inv. Date: 11-16-76 Page: 1 of 1

Diagram No.: 1.3.2 Description: Edit Processing Options

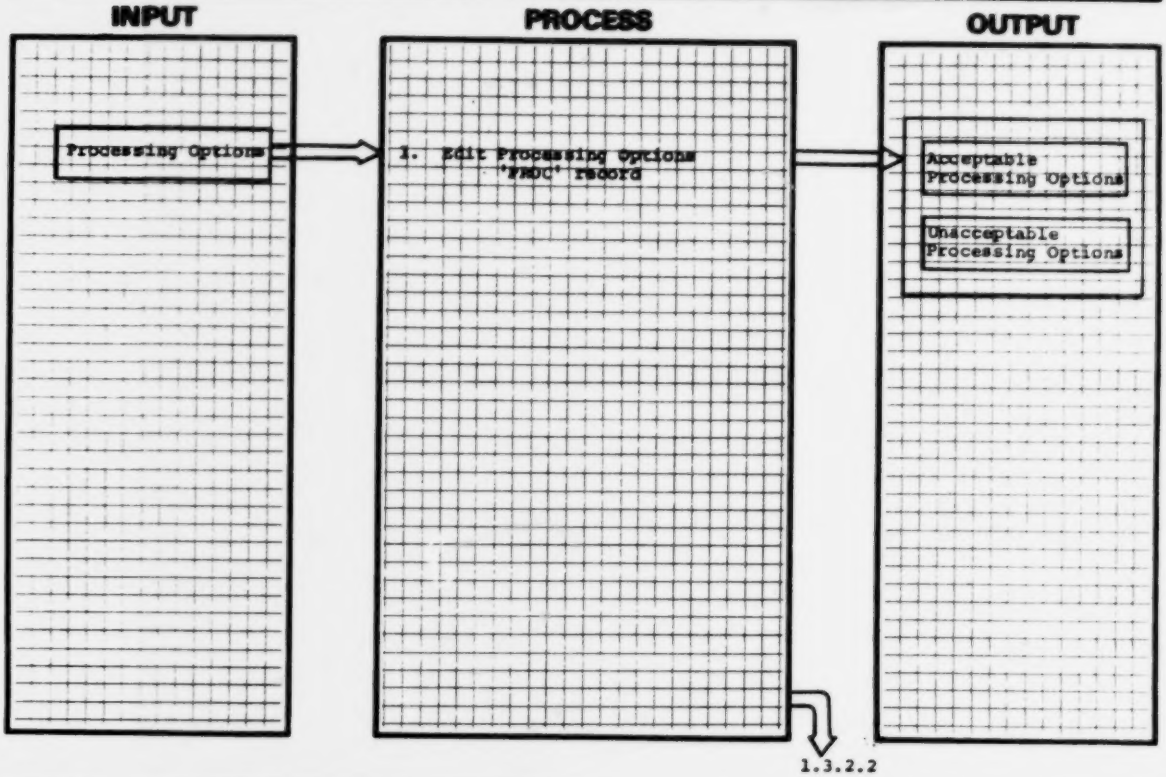


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Processing Options (PROC) record.	1.3.2.1	PWSI030	
2	Edit Processing Options (SORT) record.	1.3.2.2	PWSI030	
3	Edit other Processing Options Records.	1.3.2.3	PWSI030	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 11-16-76 Page: 1 of 1

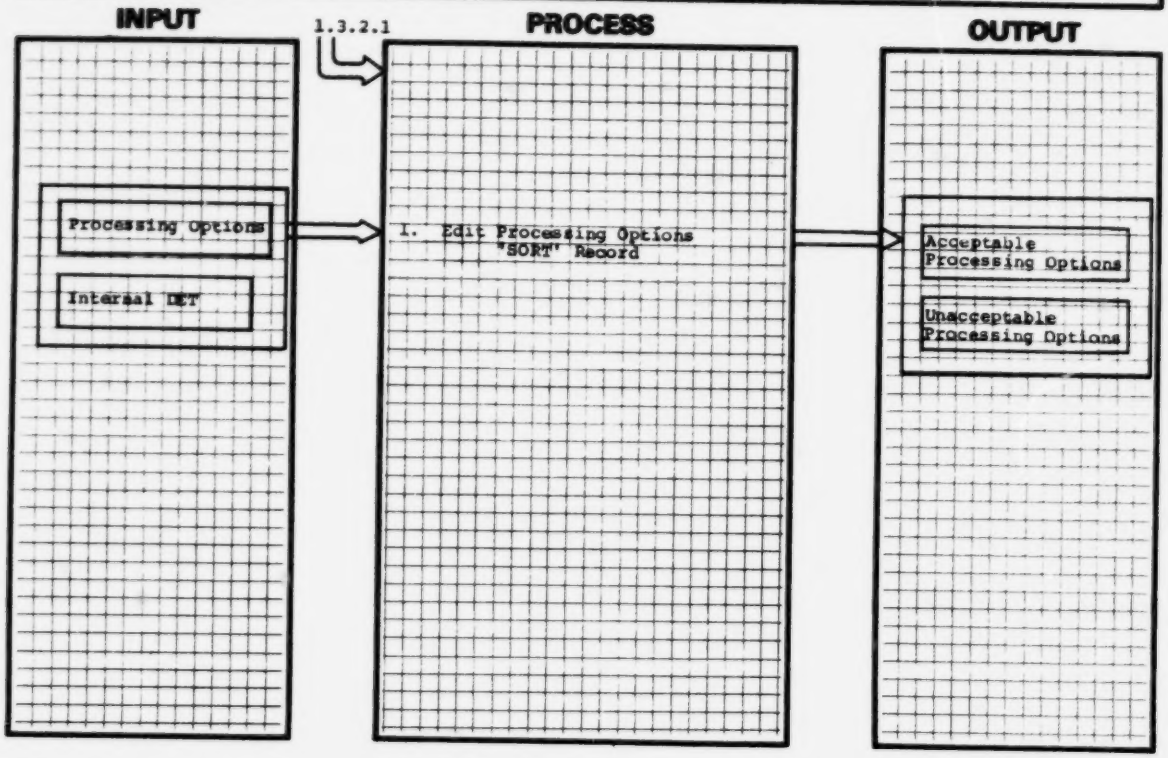
Diagram No.: 1.3.2.1 Description: Edit Processing Options 'PROC' Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Record 'PROC' as follows: a. Date (month, day, year) must be a valid date. This date is used in producing the report. b. Columns 14-18 indicate what type of file is being used as input. A "Y" or "N" for one of the following: 1. Column 14: New PWS Records 2. Column 15: Incomplete PWS Records 3. Column 16: PWS Status Requests 4. Column 17: Records Unsuccessfully Updated 5. Column 18: Selection Extract File This determines the title of the report. An error exists if: a. No 'PROC' record exists b. The date is invalid, no data will appear on the report c. There is more than one 'PROC' record. In this case, the second 'PROC' record is in error. Default values used if invalid or not filled in are "N" for columns 14-18 meaning no report is produced.	1.3.1.1	PWSI030	206

MODEL STATE INFORMATION SYSTEM

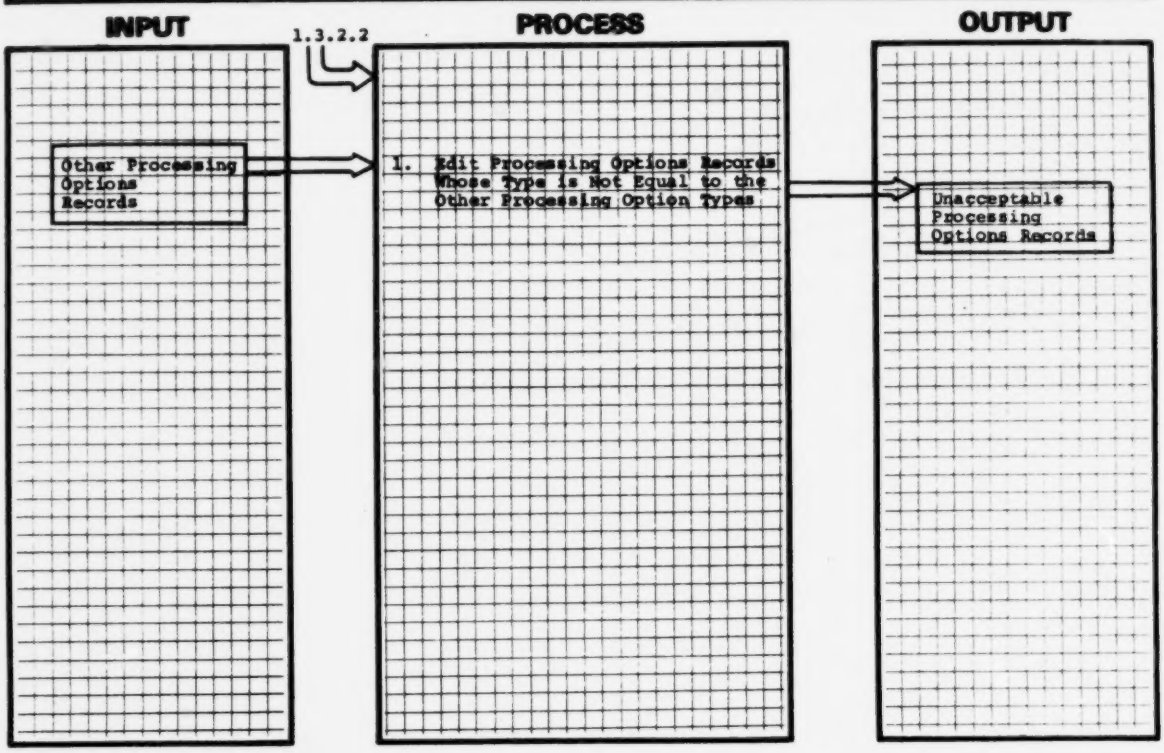
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 **of** 1
Diagram No.: 1.3.2.2 **Description:** Edit the Processing Options "SORT" Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with "SORT" in positions 1-4 of the records as follows: a. PWFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the PWFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, PWFI-SORT-MNEMONIC and PWFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. PWFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the PWFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MNEMONIC must be present. c. PWFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MODE must be present. As each PWFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first "SORT" Processing Options record must contain at least one entry. If an error exists on any "SORT" record, then it will be written on the Condensed Report and processing will be terminated.	1.3.2.2	PWSI030	100 239 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 of 1
Diagram No.: 1.3.2.3 **Description:** Edit Other Processing Options

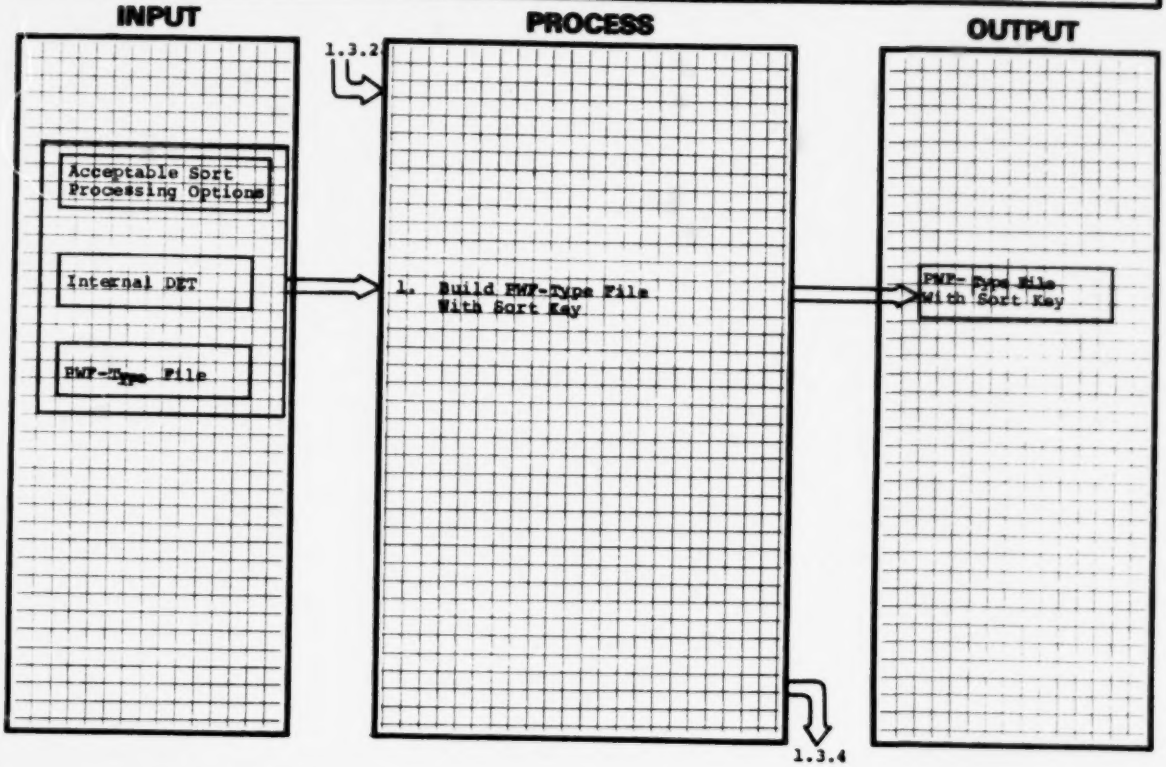

INPUT
1.3.2.2
PROCESS
OUTPUT
Other Processing Options Records
1. Edit Processing Options Records Whose Type is Not Equal to the Other Processing Option Types
Unacceptable Processing Options Records

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Any Processing Options records which fall into this category are in error and should be written to the Public History Selection Statistics Report and flagged as being in error. Processing is terminated.		PWSI030	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 of 2

Diagram No.: 1.3.3 **Description:** Build PWF-Type File with Sort Key

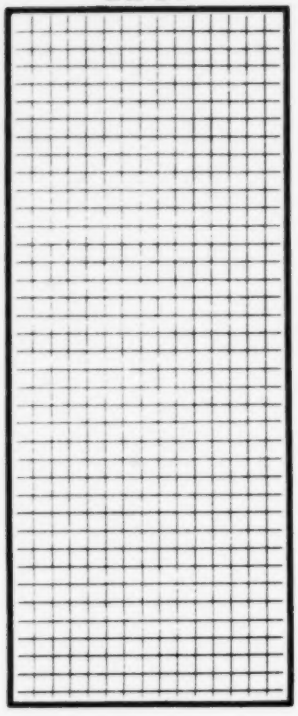


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Public Water File (PWF-Type File) based on the criteria on the "SORT" Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) PWF-Type File record as an array of one character values. b. Match the PWFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the PWF-Type File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the PWF-Type File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		PWSI030	200 239

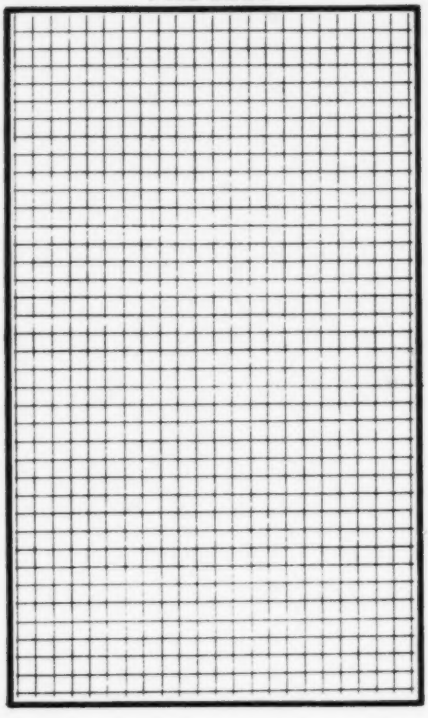
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 2 **of** 2
Diagram No.: 1.3.3 **Description:** Build PWF-Type File with Sort Key

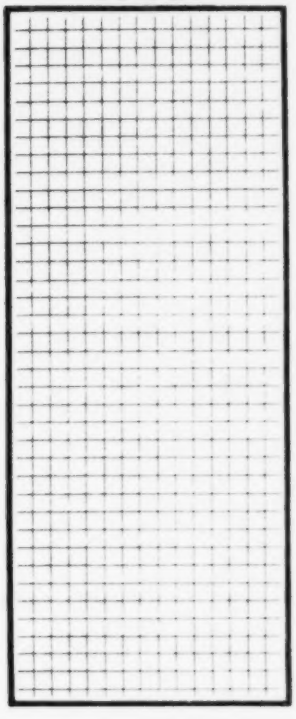
INPUT



PROCESS



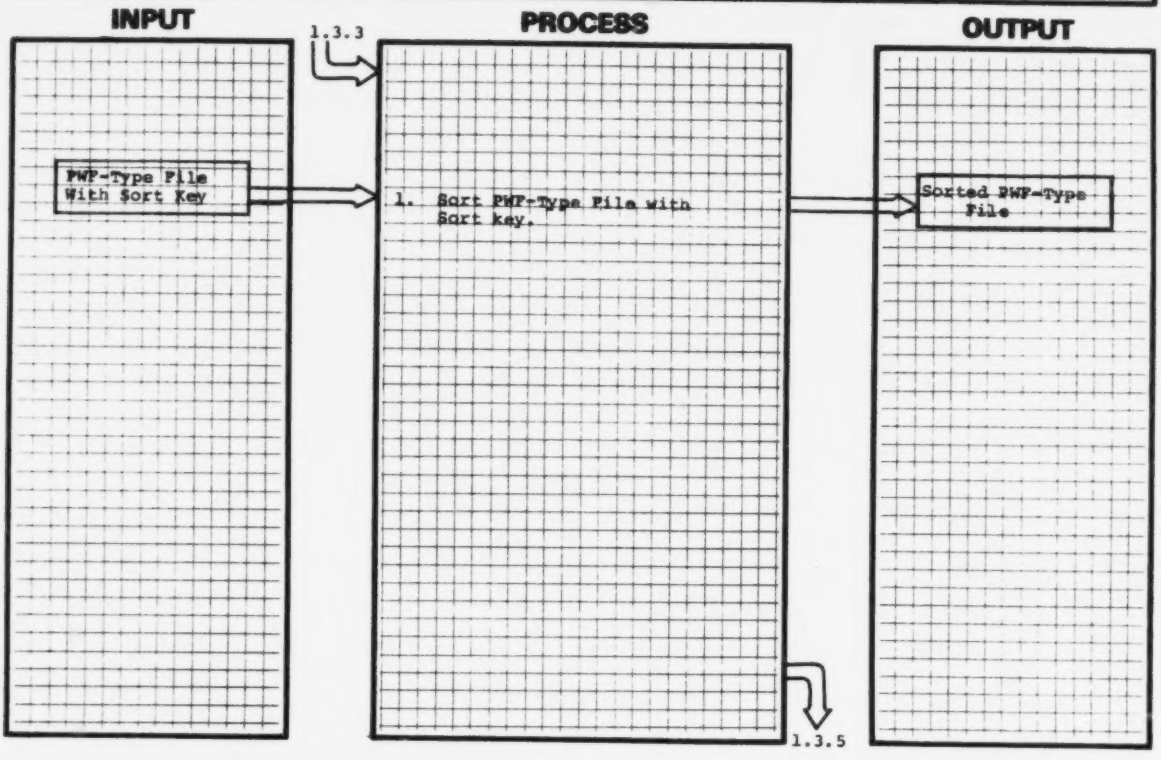
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows: (a) If the PWFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the PWFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key.			
	d. If the PWFI-SORT-MODE = "A" (ascending), move the value obtained in c. to the proper location in the sort key. If the PWFI-SORT-MODE = "D" (descending), redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the PWFI-SORT-SEQUENCE.			
	Note: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions			

MODEL STATE INFORMATION SYSTEM

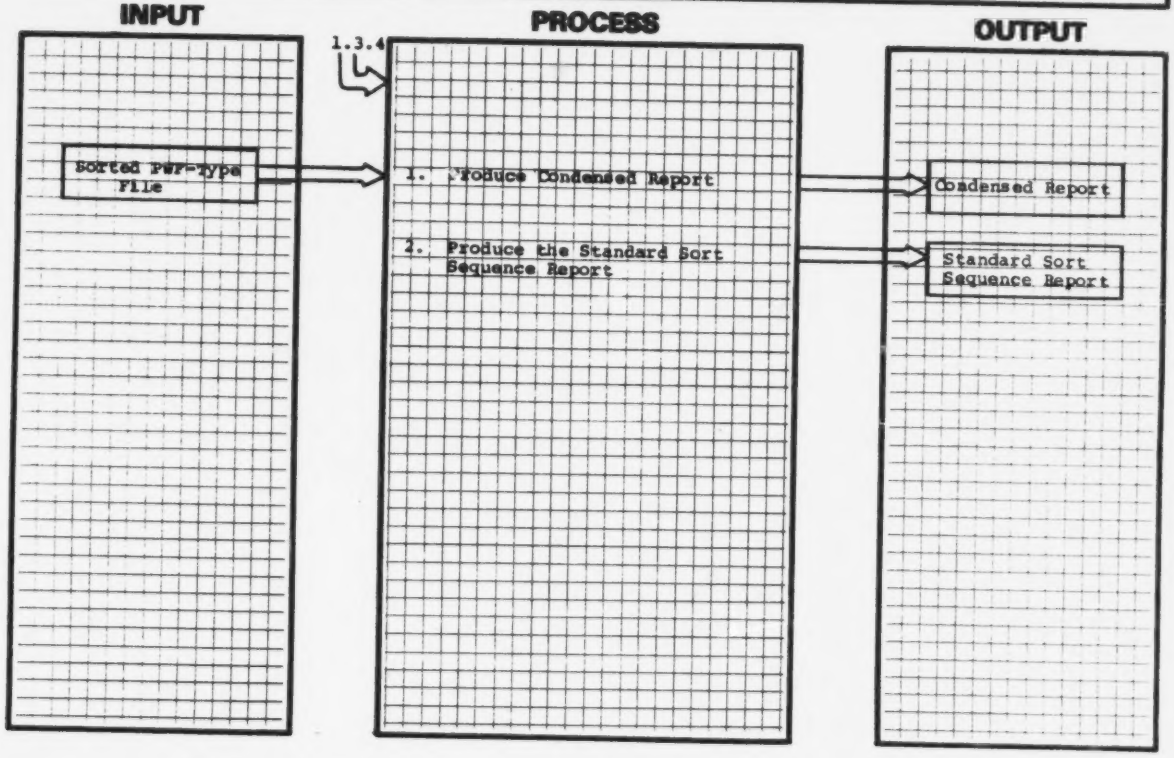
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 of 1
Diagram No.: 1.3.4 **Description:** Sort PWF-Type File with Sort Key



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the PWF-Type File in ascending sequence according to the thirty position sort key.		PWSI030	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 of 1
Diagram No.: 1.3.5 **Description:** Produce Condensed Report and the Standard Sort Sequence Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce Condensed Report. If sequence is major Region, District, use control breaks for those to skip to new page. This can be determined by checking the SORT options records for mnemonic names PW-S-REGN and PW-S-DIST as first and second sort sequences.		PWSI030	300
2	Produce the Standard Sort Sequence Report.		PWSI030	MSIS. 311 MSIS. 309

NARRATIVE

SUBSYSTEM: Public Water System Inventory
PROGRAM NAME: PWSI040
DATE: November 10, 1976

I. OBJECTIVES:

The objective of this program is to produce the Production and Capacity Data Report. This report is optional and will be produced upon request.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	PWF-Type File	PWF-RECORD	PWSI.200
2.	Data Element	DET-RECORD	MSIS.201

B. Processing Options Records

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	PWFI-PROC-RECORD		PWSI.206
2.	Sort Options	PWFI-SORT-RECORD	PWSI.100	PWSI.239

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Production and Capacity Data Report	PWSI.302
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Build the internal Data Element Table (DET) in working storage to be used in editing and building the sort key.

2. Edit the following:

   a. 'PROC' record contains a date which will appear on the report. If invalid, no date will appear on the report.

   b. Determine which one of the following will serve as input to determine the title of the report:

      New PWS Records, Incomplete PWS Records, PWS Status Requests, Records Unsuccessfully Updated, or Selection Extract File.

   c. The SORT record(s) will contain the order or sequence in which the sort key is to be built as well as the mnemonic names of the data elements to use in building the sort key and the sort mode, ascending or descending.

   d. The default option is to produce the report in the input sequence.

3. Based on criteria established in the SORT options record(s), build a sort key for each PWF-type record. Maximum length of the key is thirty (30) positions.

4. Sort the PWF-Type File according to the sort key.

5. Produce the Production and Capacity Data Report from the sorted file and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunching Instructions

1. Processing Options

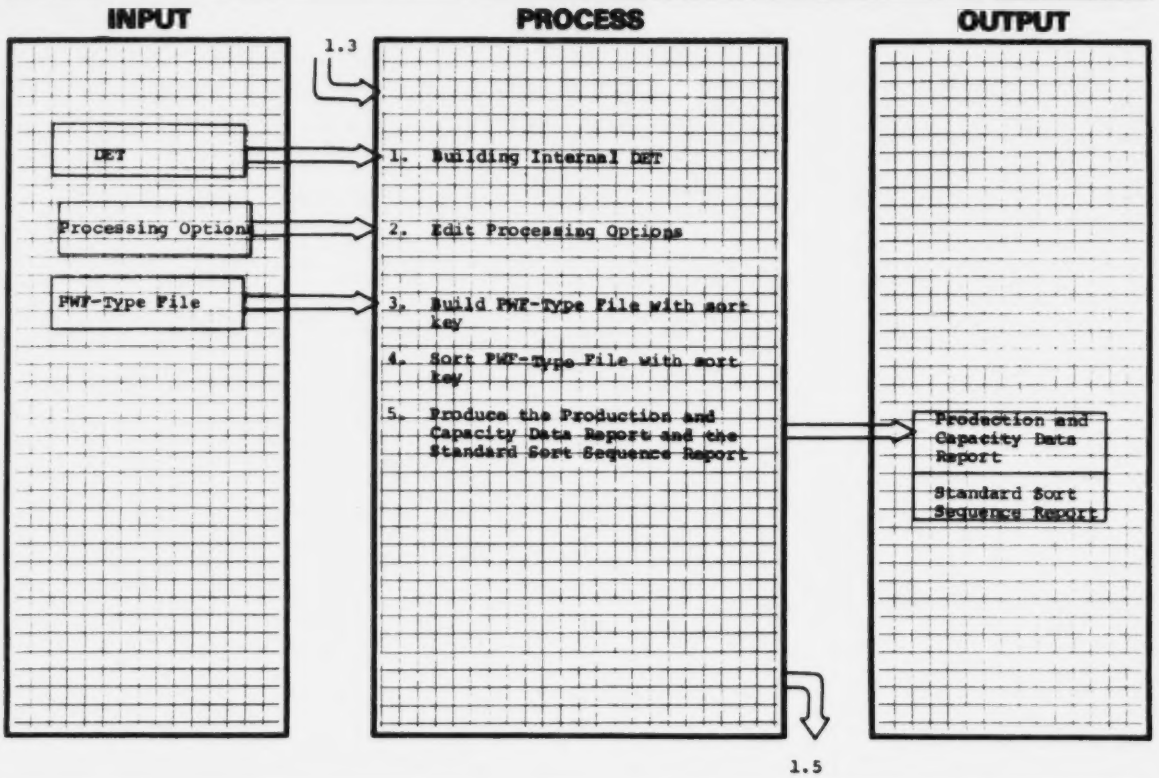
2. Sort Options

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

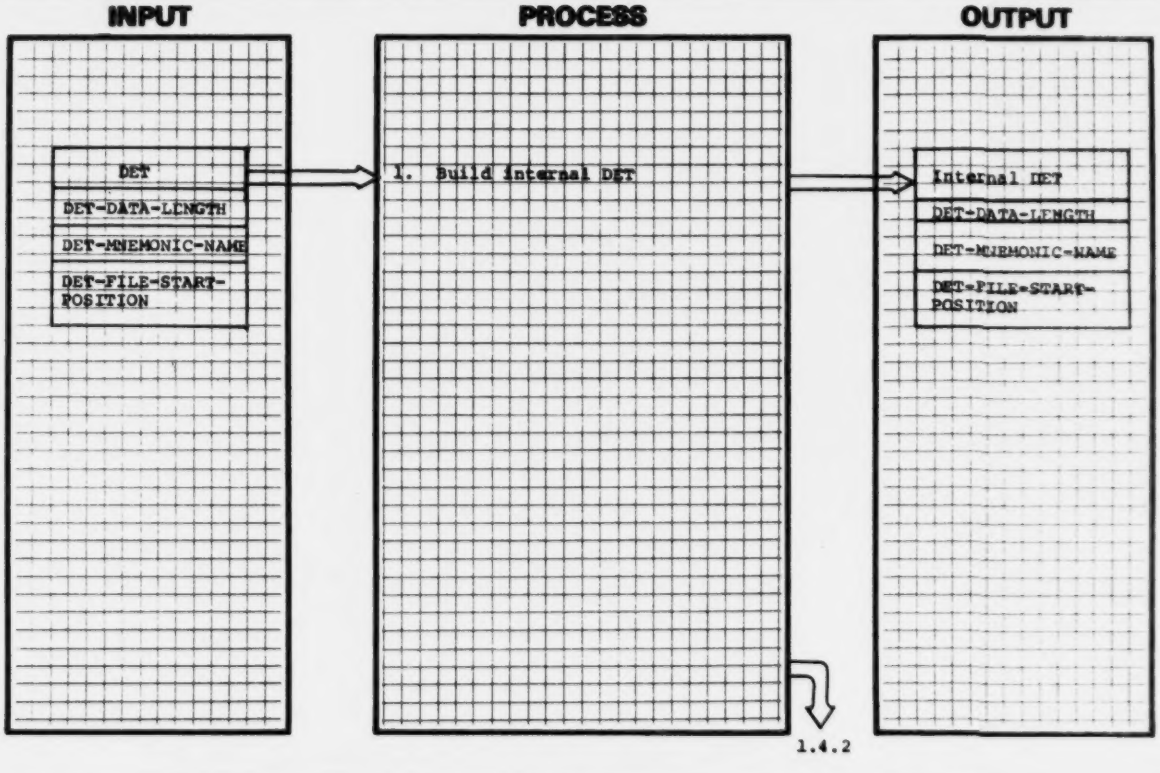
Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.4 **Description:** Produce Production Data Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Data Element Table (DET).	1.4.1	PWSI040	
2	Edit Processing Options and Sort Options.	1.4.2	PWSI040	
3	Build a PWF-Type File with a sort key.	1.4.3	PWSI040	
4	Sort the PWF-Type File with a sort key.	1.4.4	PWSI040	
5	Produce the Production and Capacity Data Report and the Standard Sort Sequence Report.	1.4.5	PWSI040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.4.1 **Description:** Build Internal DET

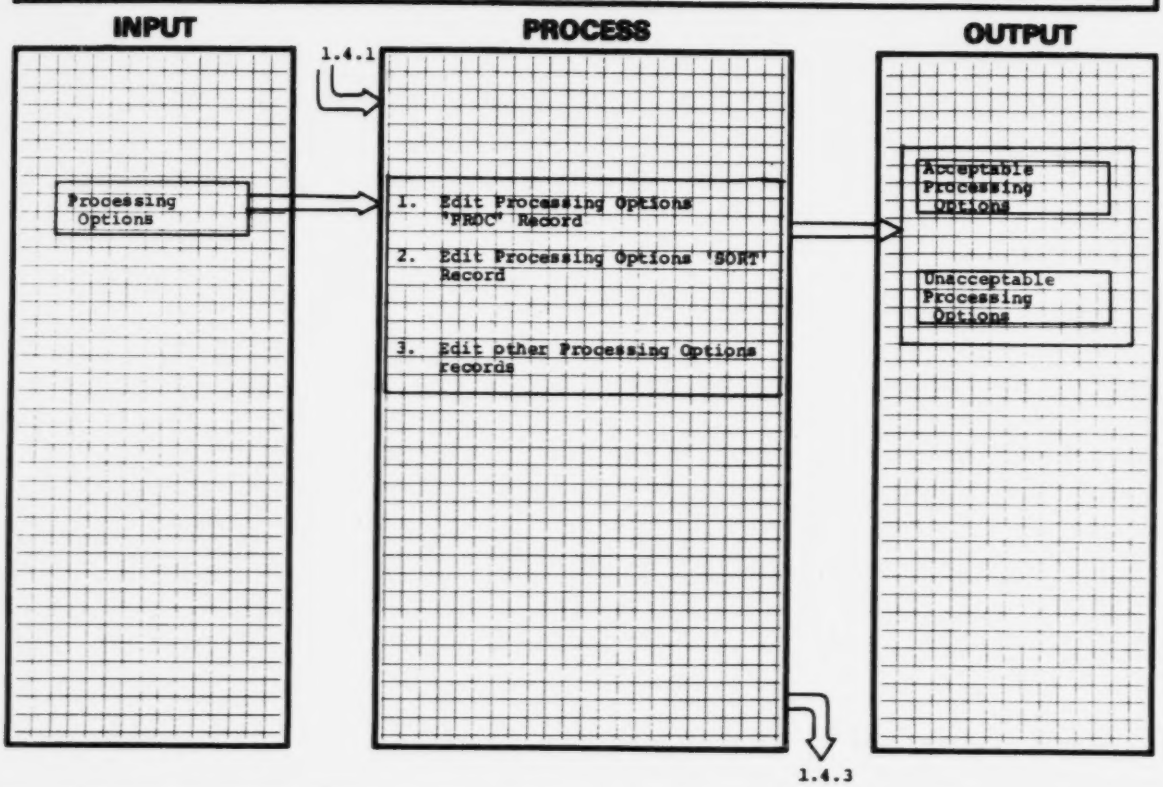


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of PW. Only the file start position, data element length, and data element mnemonic are used.		PWSI040	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1

Diagram No.: 1.4.2 **Description:** Edit Processing Options

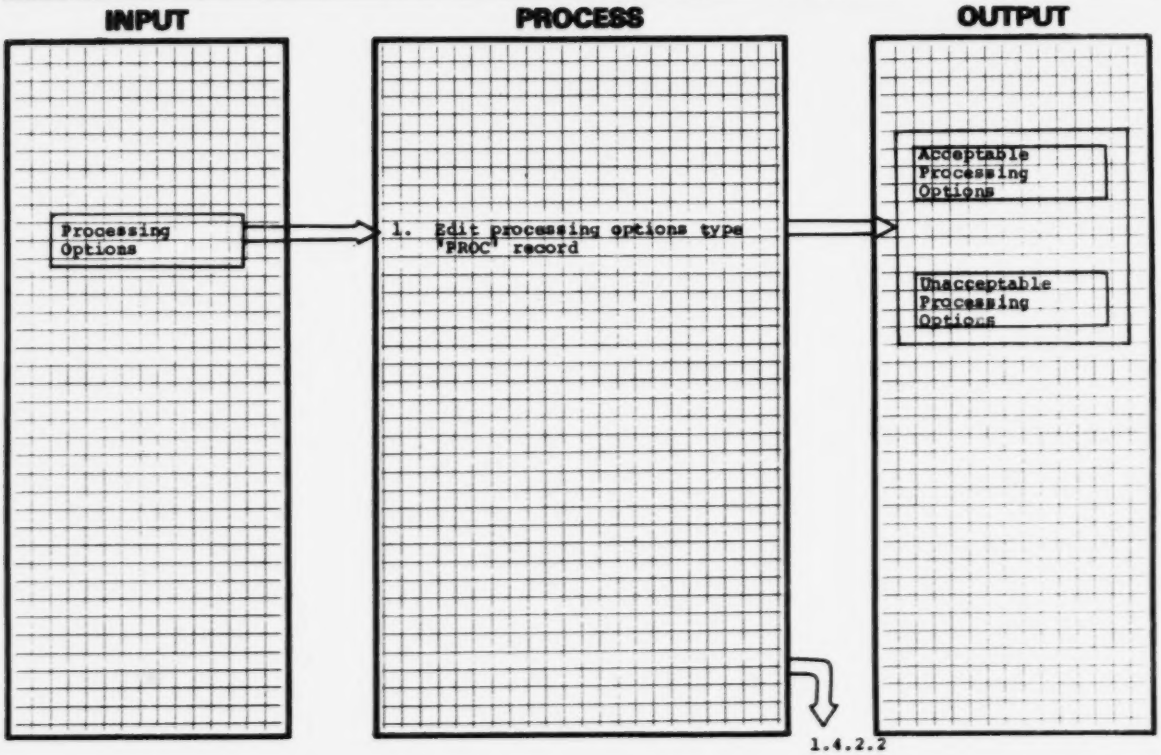


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Processing Options (PROC) record to determine which report is to be produced and the report date.	1.4.2.1	PWSI040	
2	Edit Processing Options (SORT) record(s).	1.4.2.2	PWSI040	
3	Edit other Processing Options records.	1.4.2.3	PWSI040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 **of** 1

Diagram No.: 1.4.2.1 **Description:** Edit Processing Options 'PROC' Record

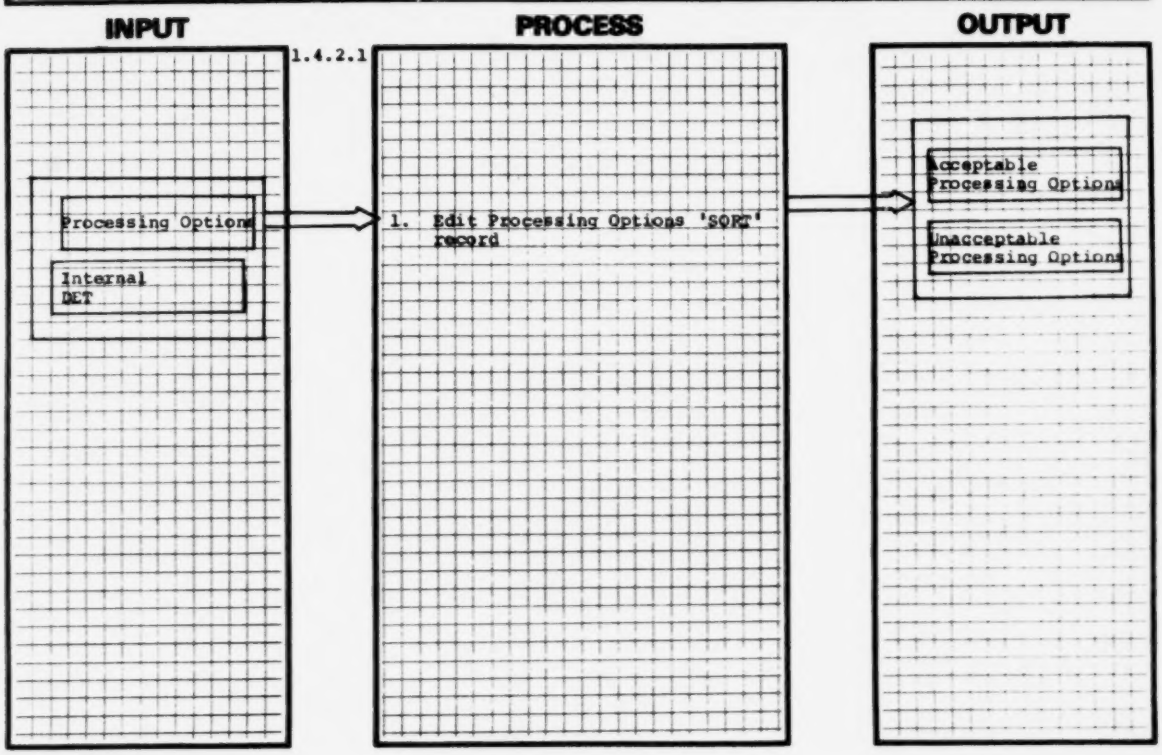


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Record 'PROC' as follows: a. Date (month, day, year) must be a valid date. This date is used in producing the report. b. Columns 14-18 indicate what type of file is being used as input. A "Y" must be entered in only one of the following columns. Enter "N" in the remaining columns. 1. Column 14: New PWS Records 2. Column 15: Incomplete PWS Records 3. Column 16: PWS Status Requests 4. Column 17: Records Unsuccessfully Updated 5. Column 18: Selection Extract File This determines the title of the report. An error exists if: a. no 'PROC' record exists b. the date is invalid. In this case, no date will be printed on the report. c. there is more than one 'PROC' record. In this case, the second 'PROC' record is in error. Default values used if invalid or not filled in are "N" for columns 14-18 meaning no report is produced.	1.4.1.1	PWSI040	206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 **of** 1

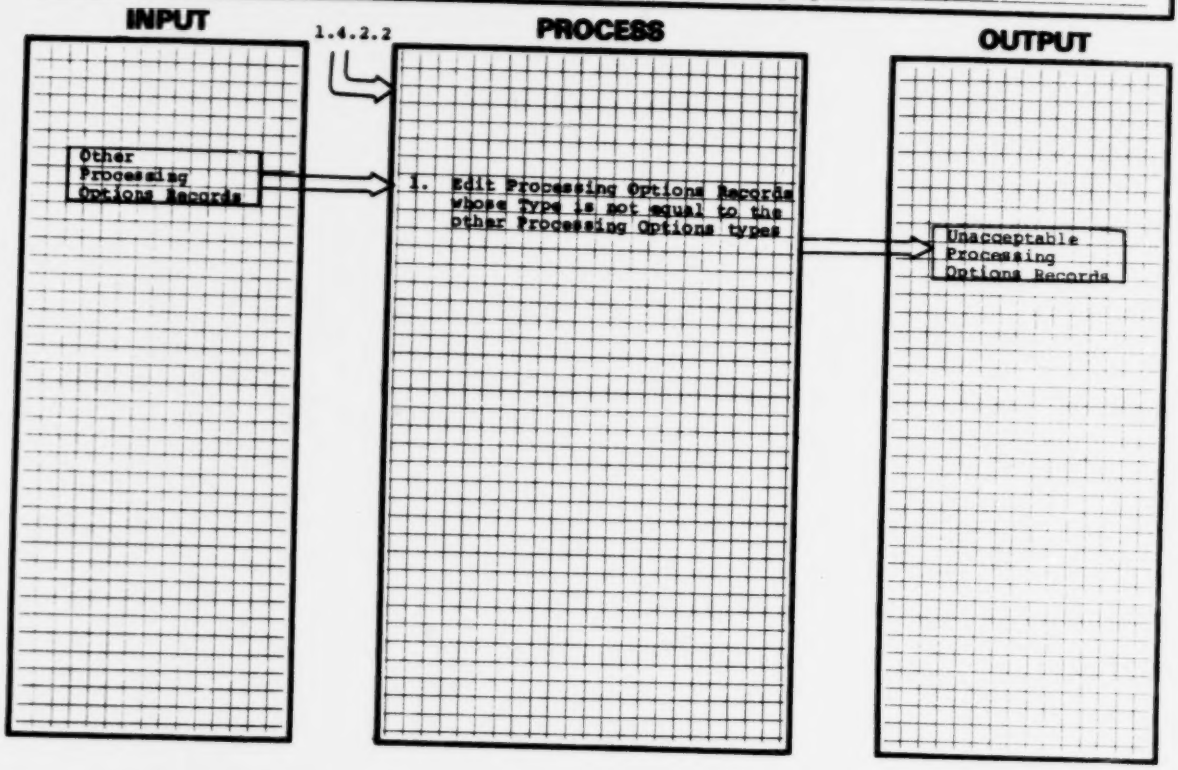
Diagram No.: 1.4.2.2 **Description:** Edit Processing Options 'SORT' Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. PWFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the PWFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, PWFI-SORT-MNEMONIC and PWFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. PWFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the PWFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MNEMONIC must be present. c. PWFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' or 'D'. If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MODE must be present. As each PWFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Production Data Report and processing will be terminated.	1.4.2.2	PWSI040	100 239 MSIS. 309

MODEL STATE INFORMATION SYSTEM

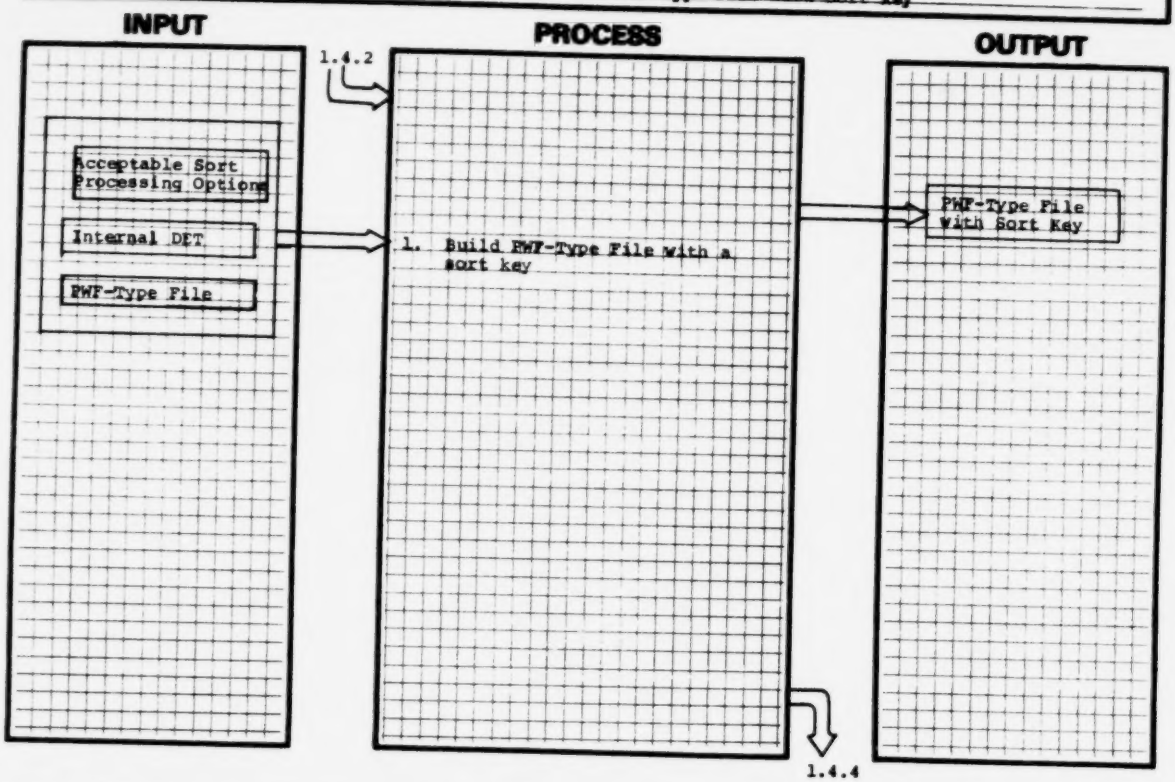
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.4.2.3 **Description:** Edit Other Processing Options


INPUT
1.4.2.2
PROCESS
OUTPUT
Other Processing Options Records
1. Edit Processing Options Records whose Type is not equal to the other Processing Options types
Unacceptable Processing Options Records

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Any Processing Options records which fall into this category are in error and should be written to the Public History Selection Statistics Report and flagged as being in error. Processing is terminated.		PWSI040	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 2
Diagram No.: 1.4.3 **Description:** Build PWF-Type File with Sort Key



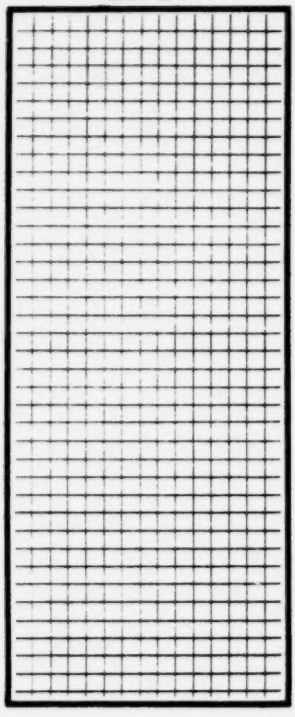
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the PWF-Type File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) PWF-Type File record as an array of one character values. b. Match the PWFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the PWF-Type File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the PWF-Type File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 (2) If the DET-FILE-START-POSITION as filled with asterisks, then the data element appears in an array and has no		PWSI040	200 239

MODEL STATE INFORMATION SYSTEM

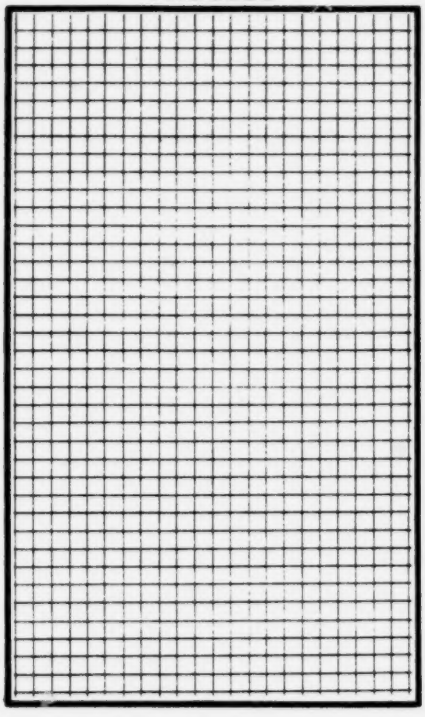
Diagram Type: Detail Subsystem: Public Water System Inv. Date: 11-18-76 Page: 2 of 2

Diagram No.: 1.4.3 Description: Build PWF-Type File with Sort Key

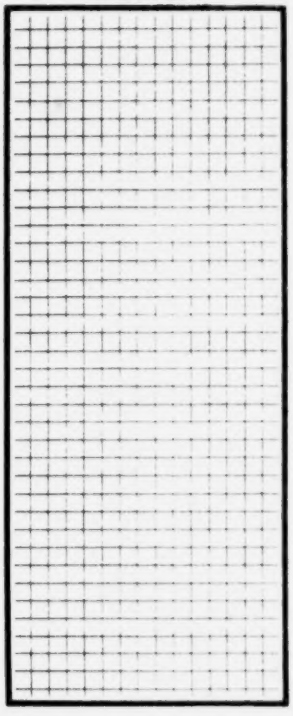
INPUT



PROCESS



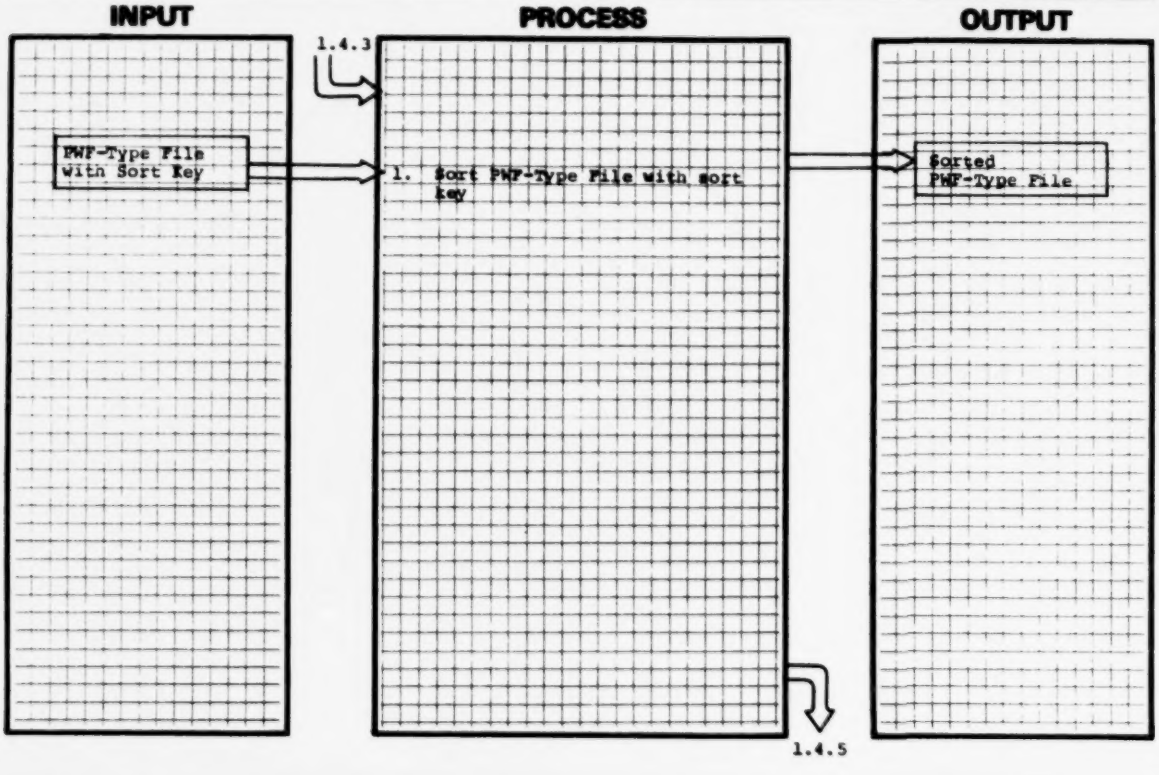
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	unique starting position. In this case all possible values in the array must be checked as follows: (a) If the PWFI-SORT-MODE = 'A' (ascending), the lowest value of the data element must be used in building the sort key. (b) If the PWFI-SORT-MODE = 'D' (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the PWFI-SORT-MODE = 'A' (ascending), move the value obtained in c. to the proper location in the sort key. If the PWFI-SORT-MODE = 'D', redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the PWFI-SORT-SEQUENCE. Note: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions			

MODEL STATE INFORMATION SYSTEM

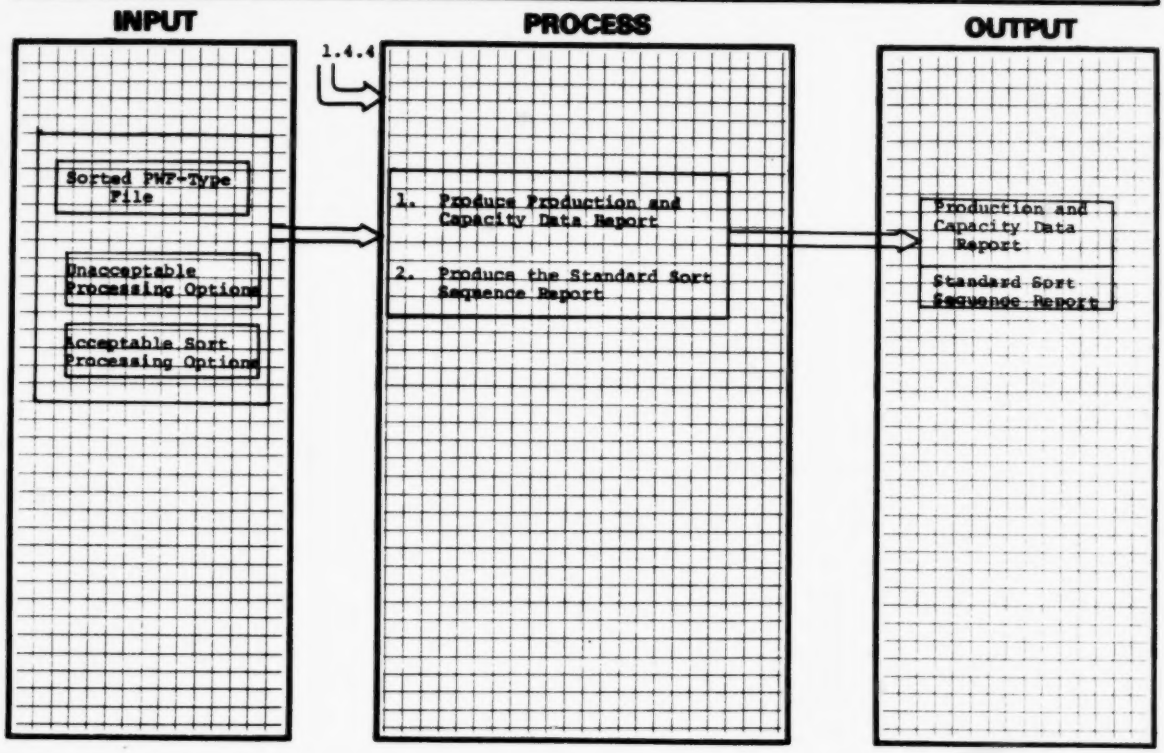
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.4.4 **Description:** Sort PWF-Type File with Sort Key



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the PWF-Type File in ascending sequence according to the thirty position sort key.		PWSI040	216

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.4.5 **Description:** Produce the Production and Capacity Data Report and the Standard Sort Sequence Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce Production and Capacity Data Report. If sequence is major Region, District use control breaks for those to skip to new page. This can be determined by checking the Sort options records for MNEMONIC names PW-S-REGN and PW-S-DIST as the first and second second sequences.		PWSI040	302
2	Produce the Standard Sort Sequence Report.		PWSI040	MSIS. 311 MSIS. 309

NARRATIVE

SUBSYSTEM: Public Water System Inventory
PROGRAM NAME: PWSI050
DATE: November 10, 1976

I. OBJECTIVES:

The objective of this program is to produce the State Discretionary Data Report. This report is optional and will be produced upon request.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	PWF-Type File	PWF-RECORD	PWSI.200
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	PWFI-PROC-RECORD		PWSI.206
2.	Sort Options	PWFI-SORT-RECORD	PWSI.100	PWSI.239

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	State Discretionary Data Report	PWSI.301
2.	Standard Sort Sequence Report	MSIS.309
		MSIS.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Build the internal Data Element Table (DET) in working storage to be used in building and editing the sort key.

2. Edit the following:

   a. 'PROC' record contains a date which will appear on the report. If invalid, no date will appear on the report.

   b. Determine which one of the following will serve as input to determine the title of the report:

      New PWS Records, Incomplete PWS Records, PWS Status Requests, Records Unsuccessfully Updated or Selection Extract File.

   c. The SORT record(s) will contain the order or sequence in which the sort key is to be built as well as the mnemonic names of the data element to use in building the sort key and the sort mode, ascending or descending.

   d. The default option is to produce the report in the input sequence.

3. Based on criteria established in the SORT options record(s) build a sort key for each PWF-Type record. Maximum length of the key is thirty (30) positions and the Standard Sort Sequence Report.

4. Sort the PWF-Type File according to the sort key.

5. Produce the State Discretionary Data Report from the sorted file.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunching Instructions:

1. Processing Options

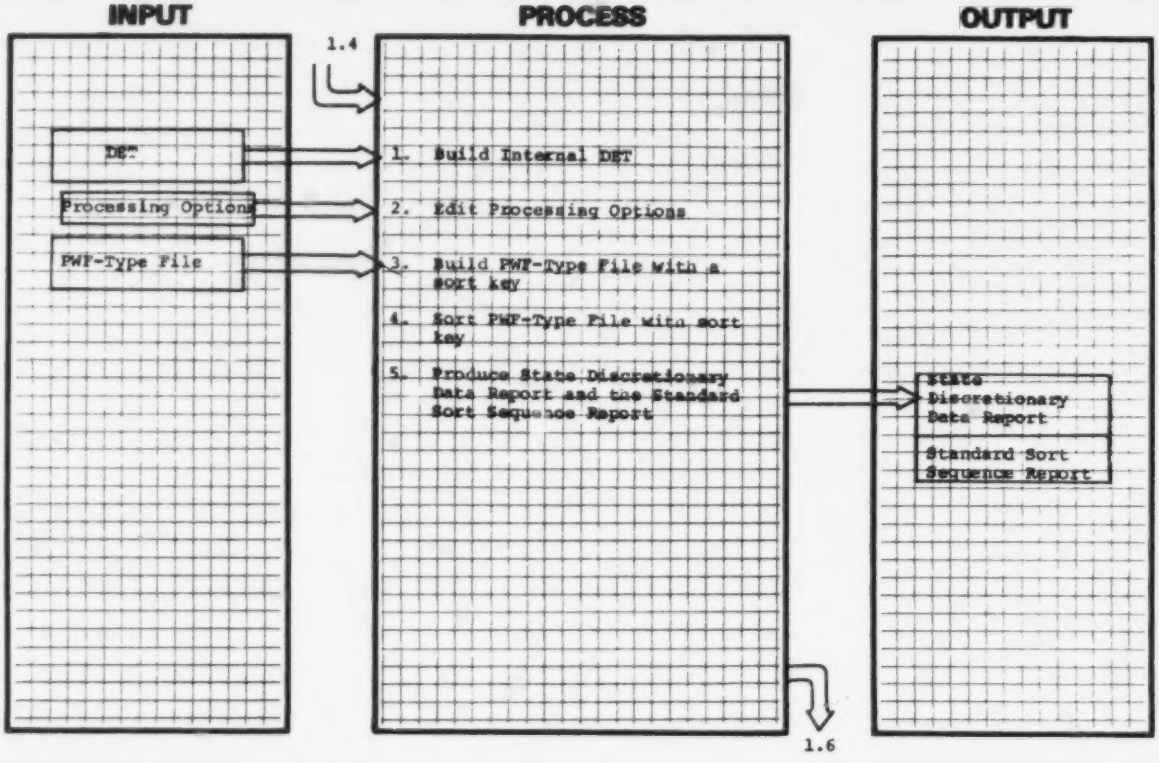
2. Sort Options

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.5 **Description:** Produce State Discretionary Data Report

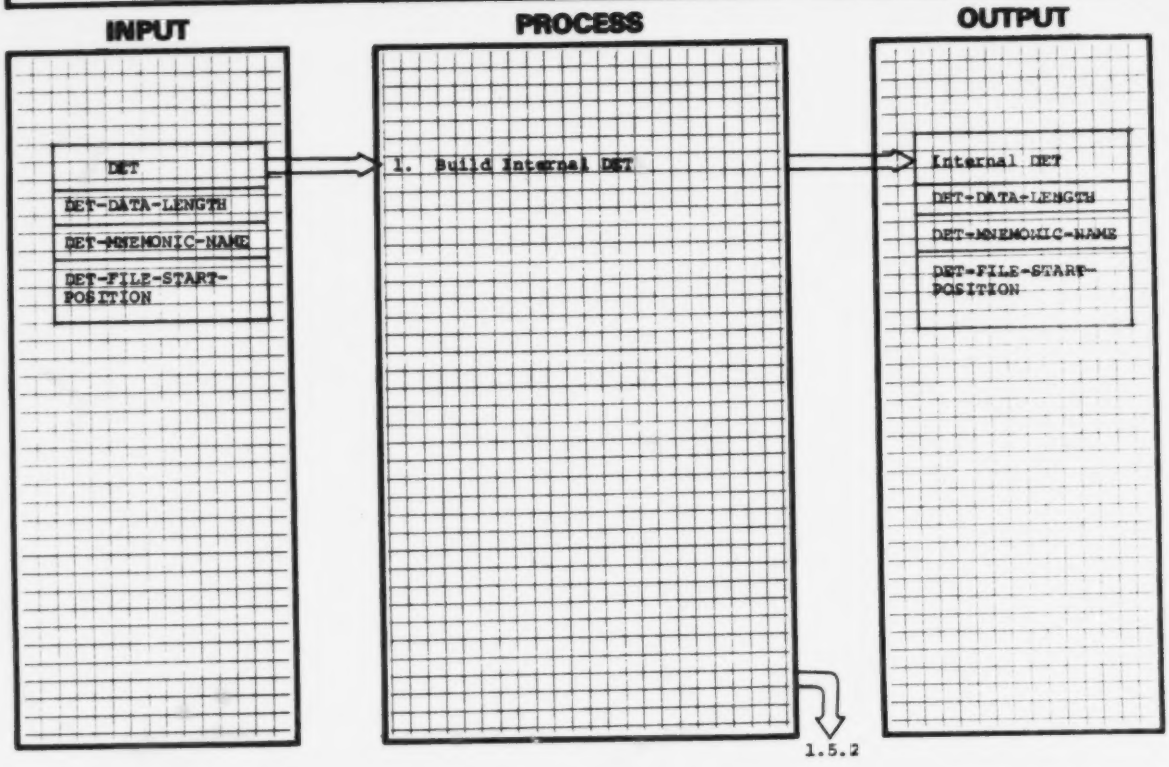


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Data Element Table (DET).	1.5.1	PWSI050	
2	Edit Processing Options and Sort Options.	1.5.2	PWSI050	
3	Build a Public Water File (PWF)-Type File with a sort key.	1.5.3	PWSI050	
4	Sort the PWF-Type File with Sort key.	1.5.4	PWSI050	
5	Produce the State Discretionary Data Report and the Standard Sort Sequence Report.	1.5.5	PWSI050	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 11-18-76 Page: 1 of 1

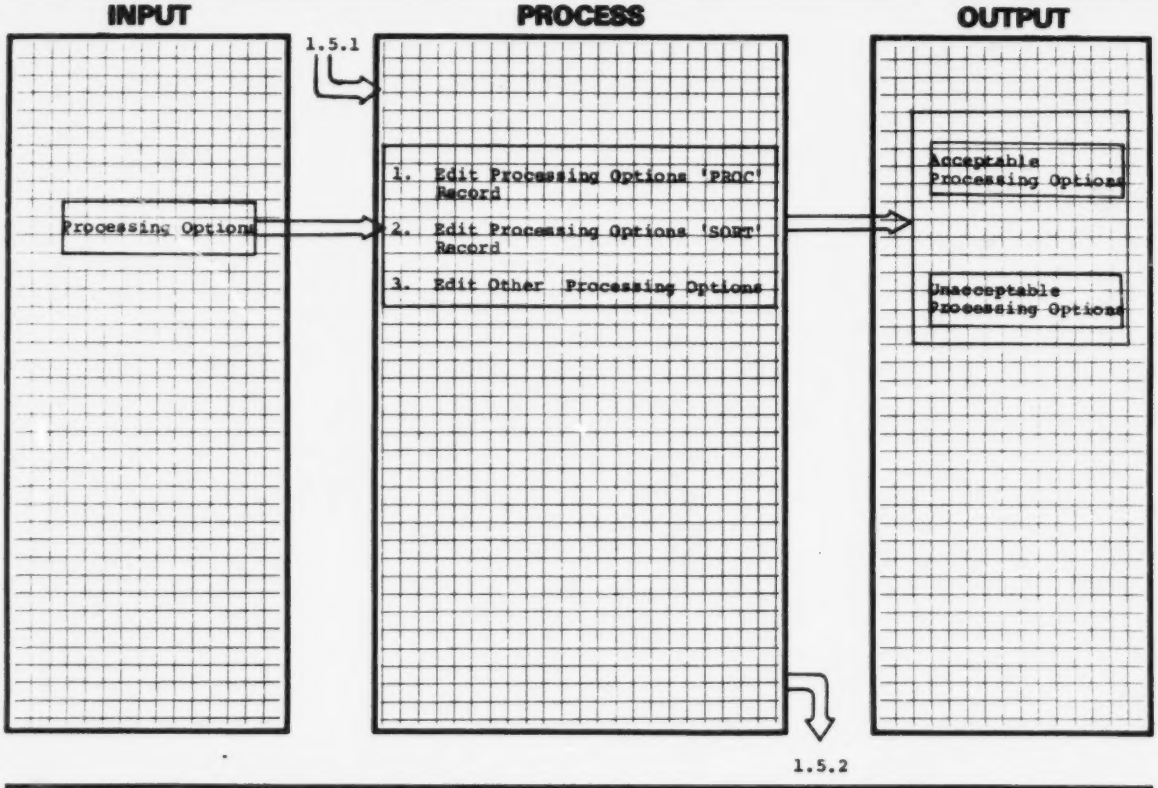
Diagram No.: 1.5.1 Description: Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of PW. Only the file start position, data element length, and data element mnemonic are used.		PWSI050	MSIS. 201

MODEL STATE INFORMATION SYSTEM

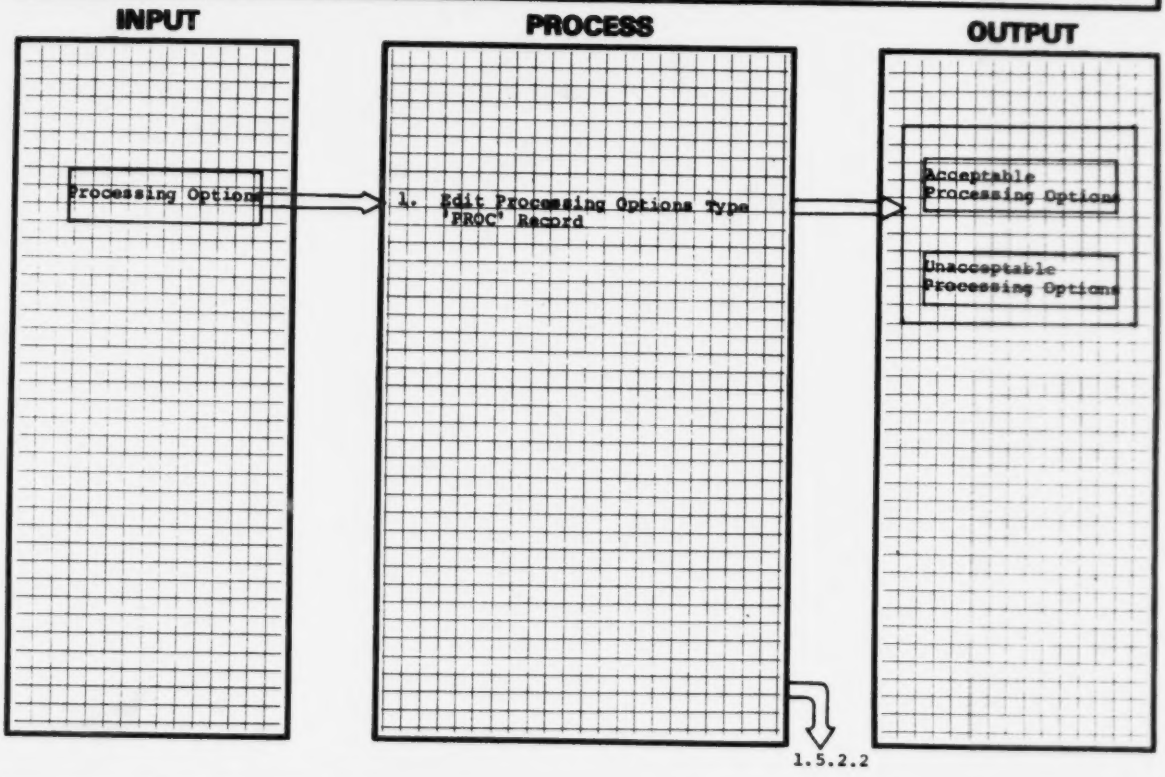
Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.5.2 **Description:** Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Processing Options (PROC) record to determine which report is to be produced and the report date.	1.5.2.1	PWSI050	
2	Edit Processing Options (SORT) record(s).	1.5.2.2	PWSI050	
3	Edit other Processing Options.	1.5.2.3	PWSI050	

MODEL STATE INFORMATION SYSTEM

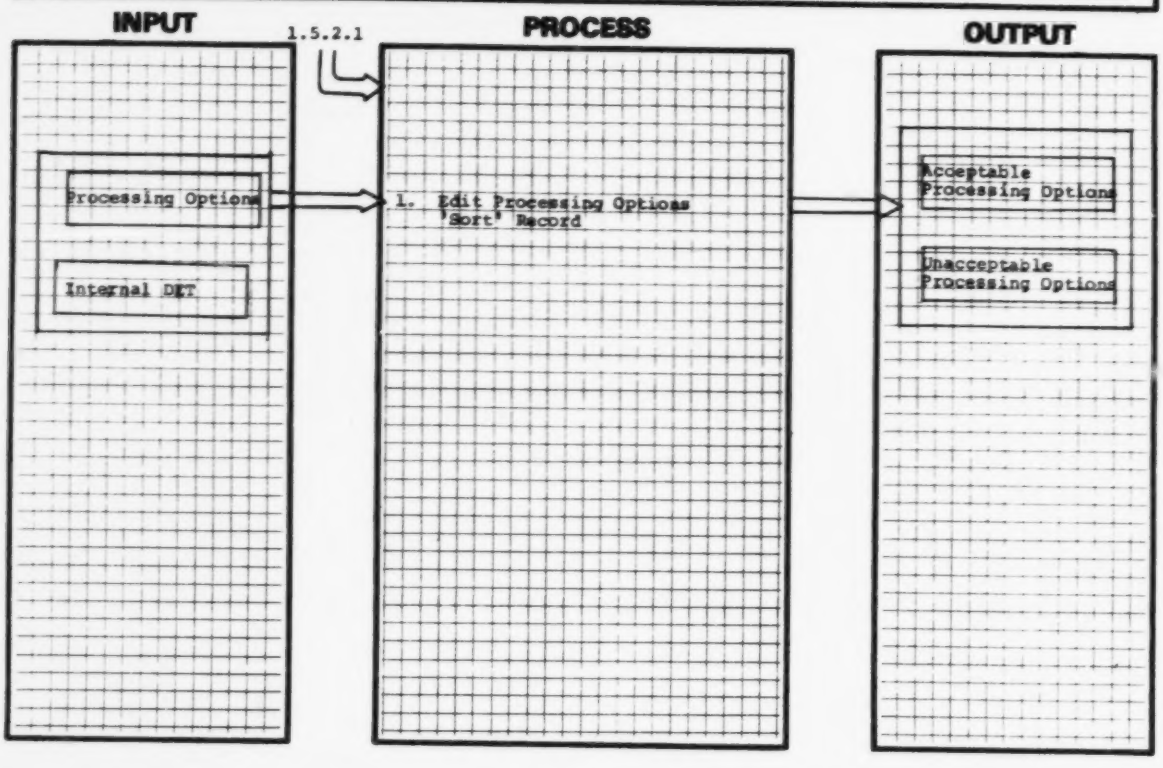
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.5.2.1 **Description:** Edit Processing Options Type 'PROC' Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options 'PROC' Record as follows: a. Date (month, day, year) must be a valid date. This date is used in producing the report. b. Columns 14-18 indicate what type of file is being used as input. A "Y" must be entered in only one of the following columns, an "N" in the remaining columns: 1. Column 14: New PWS Records 2. Column 15: Incomplete PWS Records 3. Column 16: PWS Status Requests 4. Column 17: Records unsuccessfully updated 5. Column 18: Selection Extract File This determines the title of the report. An error exists if: a. no 'PROC' record exists. b. the date is invalid. In this case, no date will be printed on the report. c. there is more than one 'PROC' record. In this case, the second 'PROC' record is in error. Default values used if invalid or not filled in are "N" for columns 14-18 meaning no report is produced.	1.5.1.1	PWSI050	206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.5.2.2 **Description:** Edit Processing Options 'SORT' Record

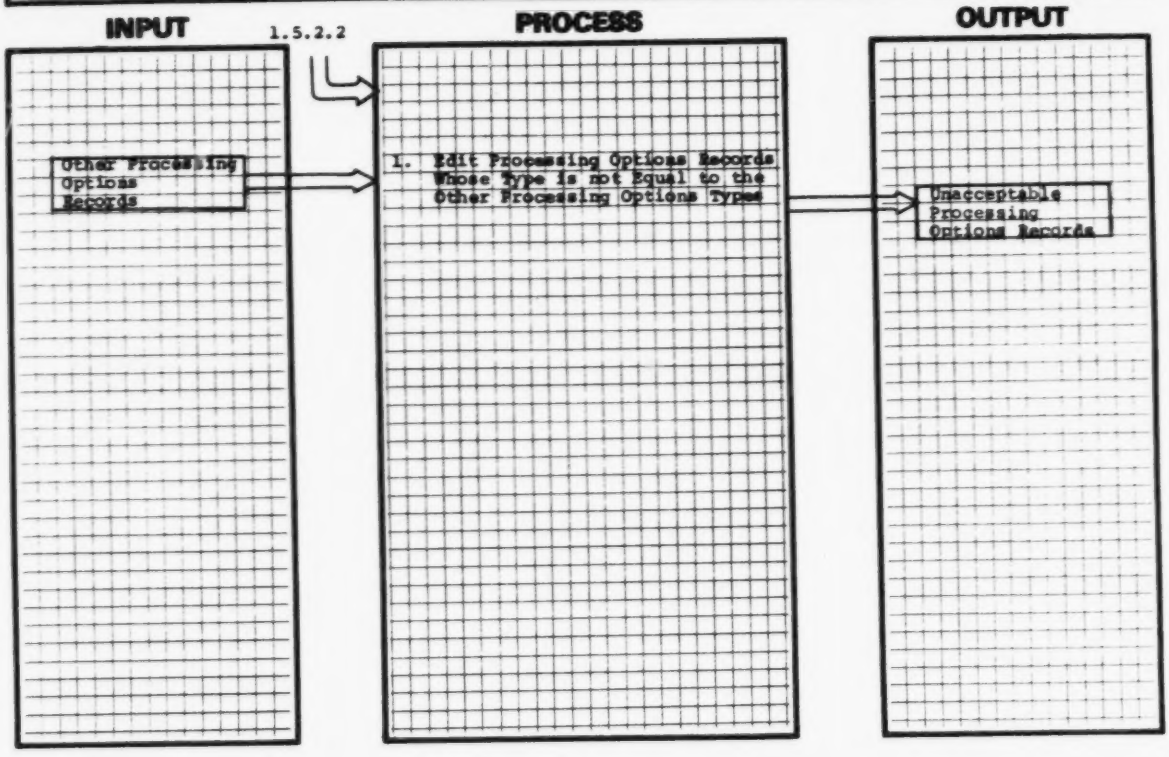


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. PWFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the PWFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, PWFI-SORT-MNEMONIC and PWFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. PWFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the PWFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MNEMONIC must be present. c. PWFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' or 'D'. If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MODE must be present. As each PWFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the State Discretionary Data Report and processing will be terminated.	1.5.2.2	PWSI050	100 239 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 11-18-76 Page: 1 of 1

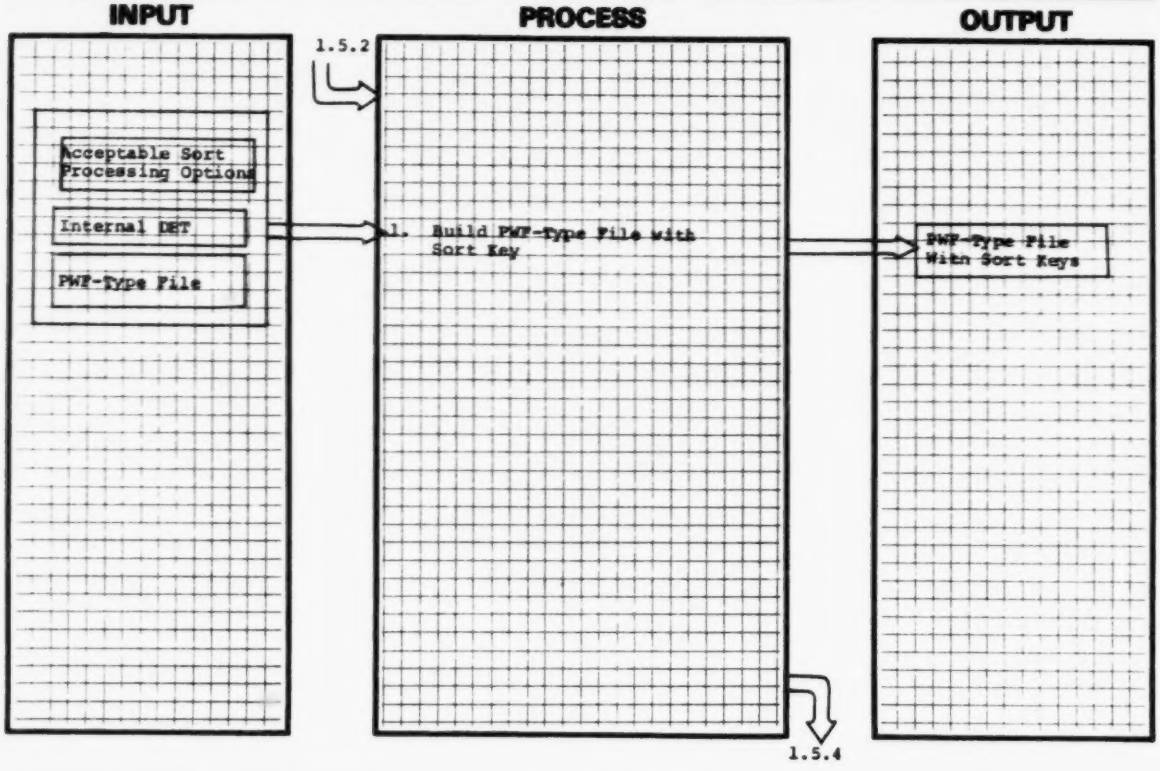
Diagram No.: 1.5.2.3 Description: Edit Other Processing Options


INPUT
1.5.2.2
PROCESS
OUTPUT
Other Processing Options Records
1. Edit Processing Options Records Whose Type is not Equal to the Other Processing Options Types
Unacceptable Processing Options Records

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Any Processing Options records which fall into this category are in error and should be written to the Public History Selection Statistics Report and flagged as being in error. Processing is terminated.		PWSI050	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 2
Diagram No.: 1.5.3 **Description:** Build PWF-Type File with Sort Key

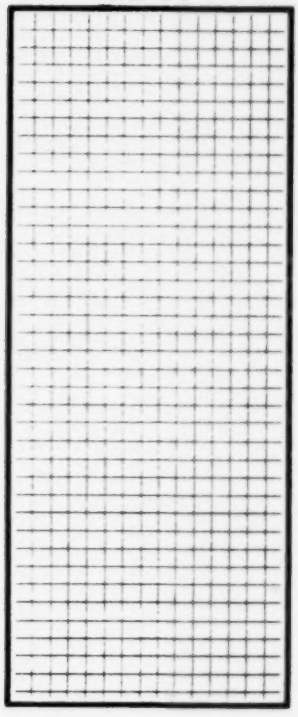


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the PWF-Type File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) PWF-Type File record as an array of one character values. b. Match the PWFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the PWF-Type File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the PWF-Type File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 (2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no		PWSI050	200 239

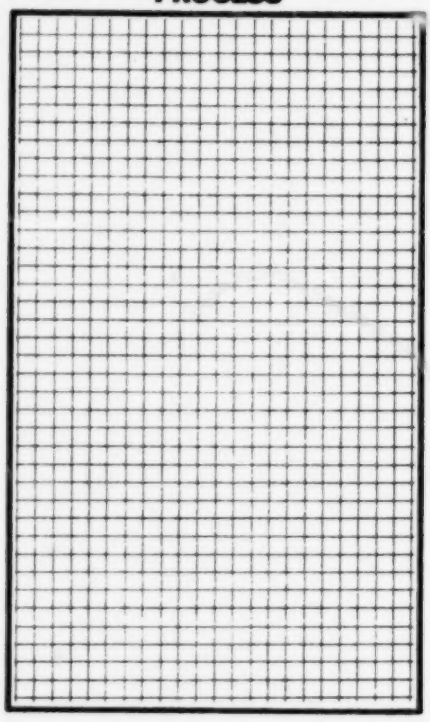
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 11-18-7[illegible] Page: 2 of 2
Diagram No.: 1.5.3 Description: Build PWF-Type File with Sort Key

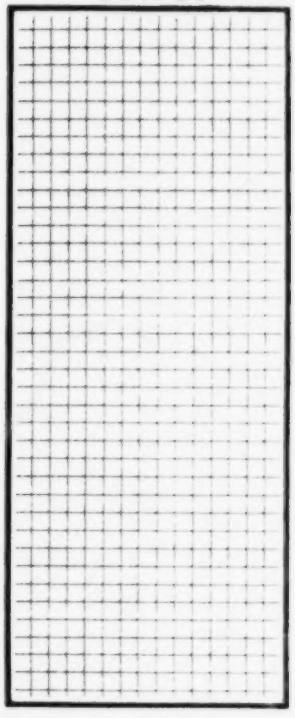
INPUT



PROCESS



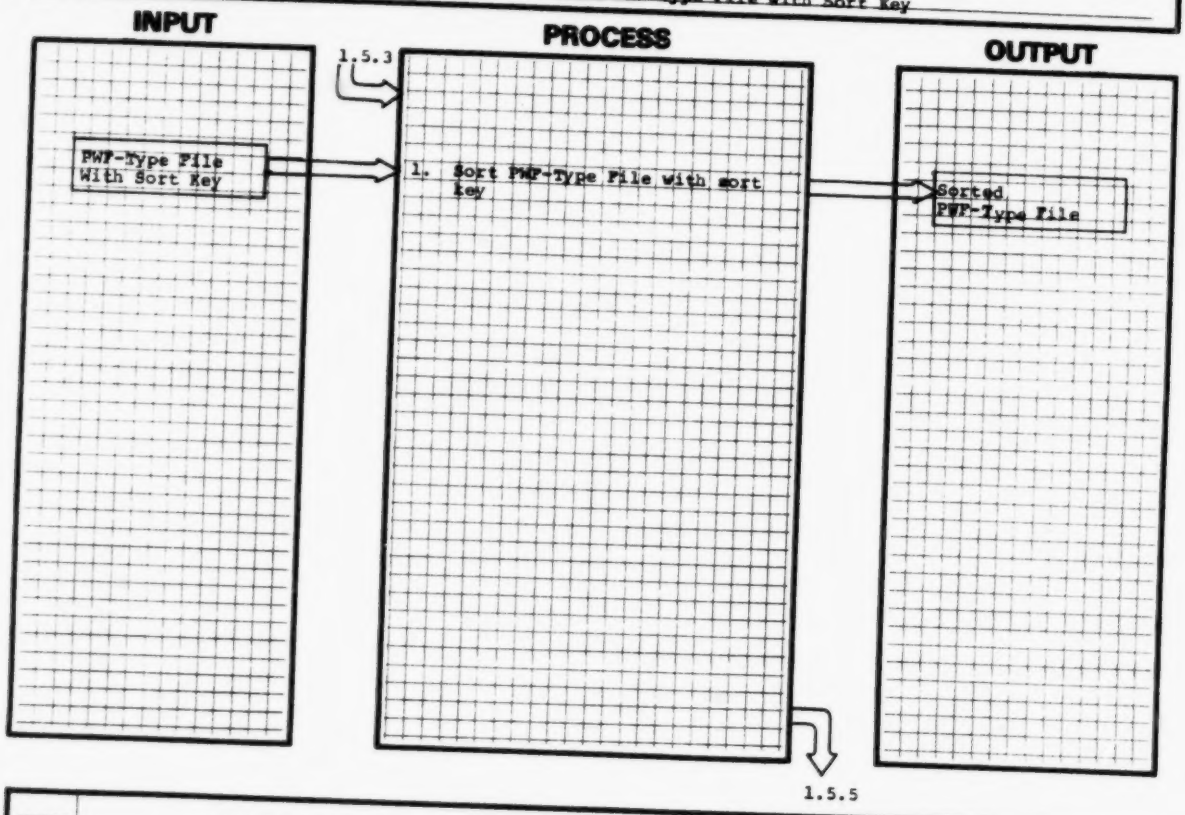
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	unique starting position. In this case all possible values in the array must be checked as follows: (a) If the PWFI-SORT-MODE = 'A' (ascending), the lowest value of the data element must be used in building the sort key. (b) If the PWFI-SORT-MODE = 'D' (descending), the highest value of the data element must be used in build the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the PWFI-SORT-MODE = 'A' (ascending), move the value obtained in c. to the proper location in the sort key. If the PWFI-SORT-MODE = 'D', redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the PWFI-SORT-SEQUENCE. Note: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions			

MODEL STATE INFORMATION SYSTEM

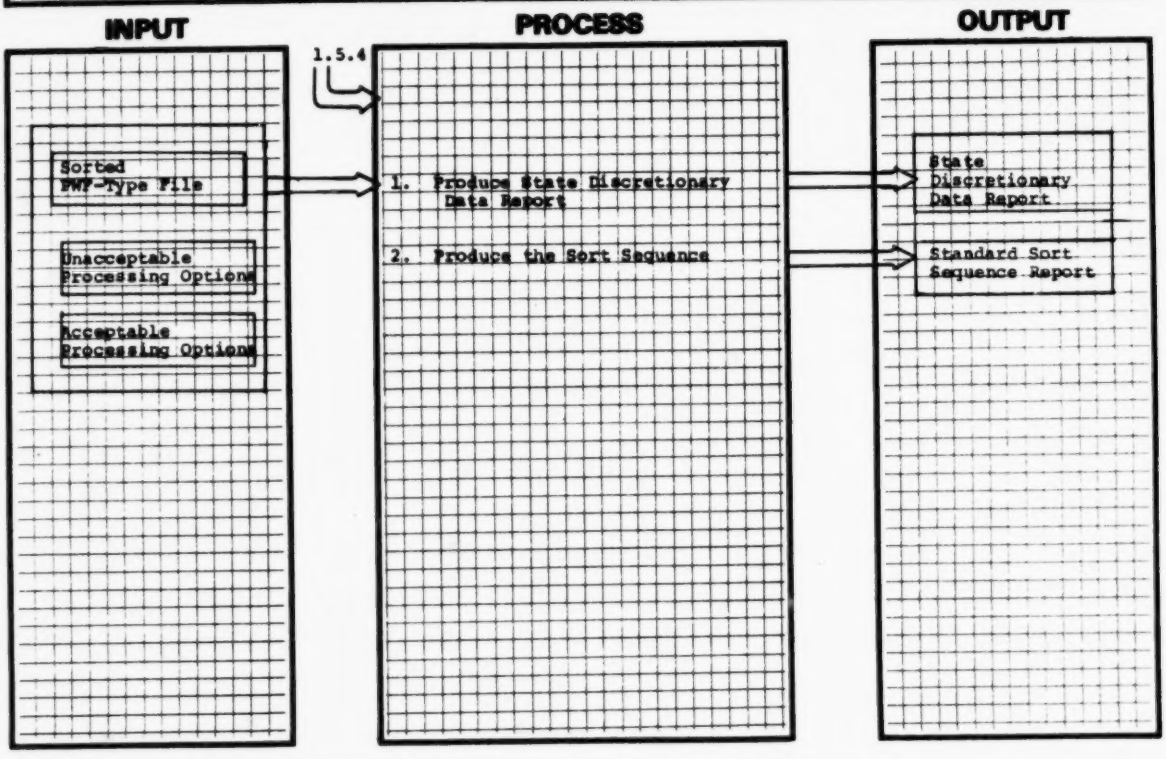
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.5.4 **Description:** Sort PWF-Type File with Sort Key



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the PWF-Type File in ascending sequence according to the thirty position sort key.		PWSI050	216 205

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.5.5 **Description:** Produce the State Discretionary Data Report and the Standard Sort Sequence Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the State Discretionary Data Report. If the sequence is a major Region, District use control breaks for those to skip to a new page. This can be determined by checking the Sort options records for mnemonic names PW-S-REGN and PW-S-DIST as the first and second sort sequences.		PWSI050	301
2	Produce the Standard Sort Sequence Report.		PWSI050	MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Public Water System Inventory
PROGRAM NAME: PWSI060
DATE: January 6, 1977

I. OBJECTIVES:

The principal function of this program is to produce the Public Water System Status and Entry Form (turnaround document) or the Comprehensive Report (computer stock listing). The type of report can be selected by a Processing Options Record. A "Y" in position 19 indicates that the Public Water System Status and Entry Form (turnaround document) is to be printed. "N" in position 19 will indicate the Comprehensive Report (computer stock listing) is to be printed. The default option, if the Processing Option is blank or invalid, is to produce the Comprehensive Report.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public Water File (PWF)-Type File	PWF-RECORD	PWSI.200
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	PWFI-PROC-RECORD		PWSI.204
2.	Sort Options	PWFI-SORT-RECORD	PWSI.100	PWSI.239
3.	Restart Options	PWFI-RESTART-RECORD	PWSI.105	PWSI.205

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Comprehensive Report	PWSI.303
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

	NAME	EXHIBIT LAYOUT
1.	Public Water System Status and Entry Form	PWSI.400

IV. FUNCTIONS:

1. Build the internal Data Element Table (DET) to be used in editing the Sort Options and in building the sort key.
2. Edit the following Processing Options:
   a. The PROC record is edited for date, which is to appear on the report. Then it is determined which one of the following is input:
      New PWF Records, Incomplete PWF Records, PWF Status Requests, Records Unsuccessfully Updated, or Selection Extract File.

      Next, the type of report option is determined. A "Y" in position 19 indicates the Public Water System Status and Entry Form (turnaround document) is to be produced. An "N" indicates the Comprehensive Report (computer stock listing) is to be produced. The default option, if the Processing Option is blank or invalid, is to produce the Comprehensive Report.
   b. The SORT record contains the order, sequence, and mode (ascending or descending) in which the sort key is to be built as well as the mnemonic names of the data elements to use in building the sort key. If there are no SORT Options, then the input file will be printed in the same order as it was created.
   c. The RESTART record, if one is required.
3. Based on the criteria established in the SORT Option records(s), build a sort key for each PWF Type record. The maximum length of the key is thirty (30) positions.
4. Sort the PWF Type file according to the sort key.
5. Produce one of the following:
   a. Comprehensive Report (computer stock listing)

b. Public Water System Status and Entry Form (turnaround document) and the Standard Sort Sequence Report will also be produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

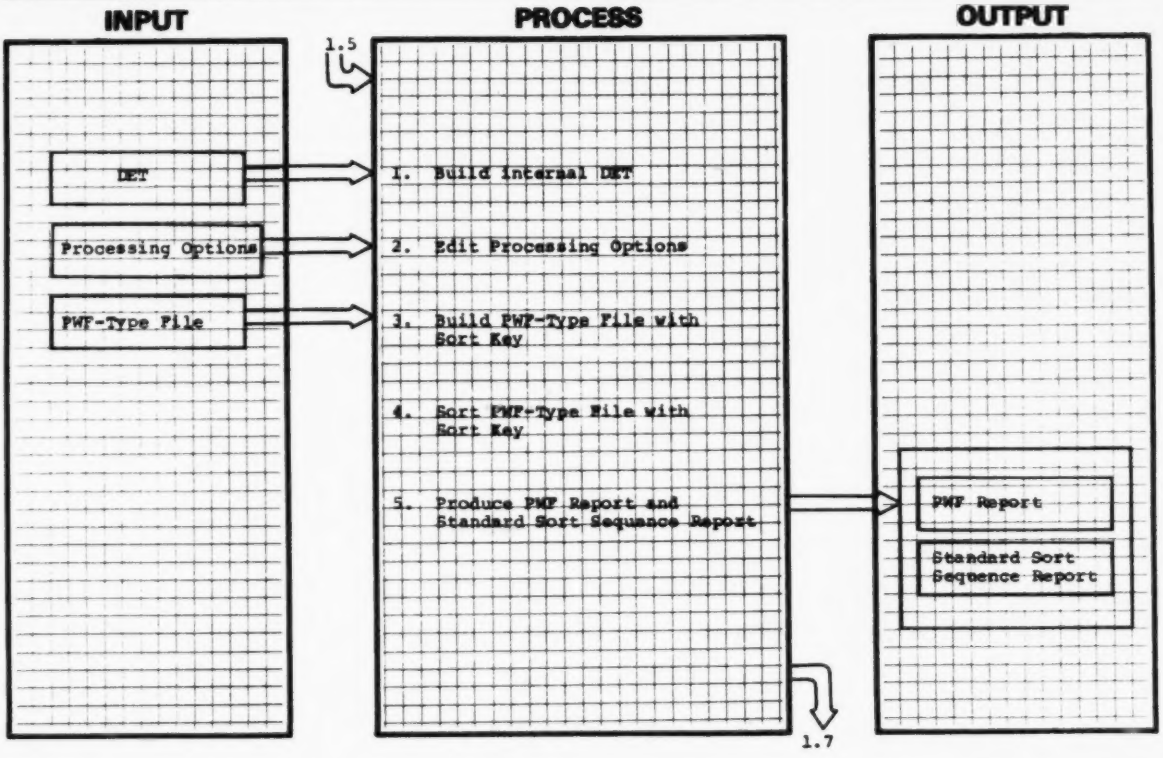
2. Sort Options

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 1/6/77 **Page:** 1 of 1
Diagram No.: 1.6 **Description:** Produce Comprehensive Report

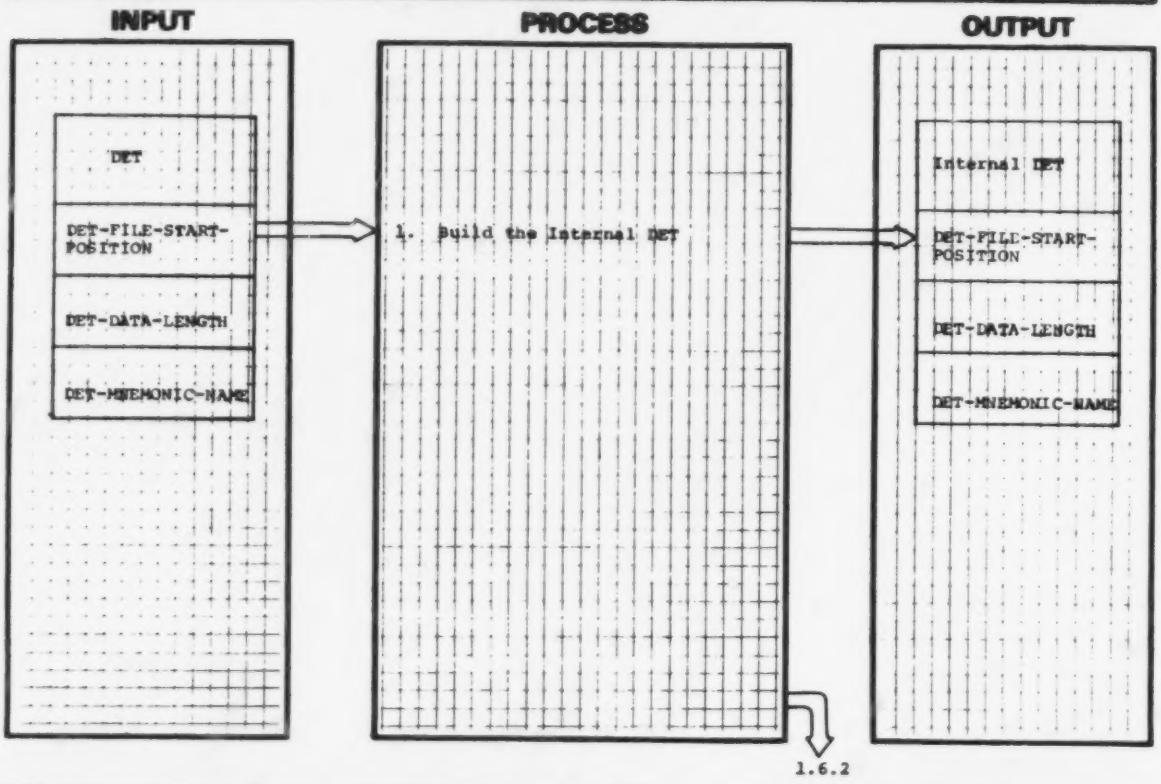


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Data Element Table (DET).	1.6.1	PWSI060	
2	Edit the Processing Options and Sort Options records.	1.6.2	PWSI060	
3	Build the PWF-Type File with a sort key.	1.6.3	PWSI060	
4	Sort the PWF-Type File according to the sort key.	1.6.4	PWSI060	
5	Produce the PWF Report in stock format or turnaround document and the Standard Sort Sequence Report.	1.6.5	PWSI060	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/6/77 Page: 1 of 1

Diagram No.: 1.6.1 Description: Build Internal DET

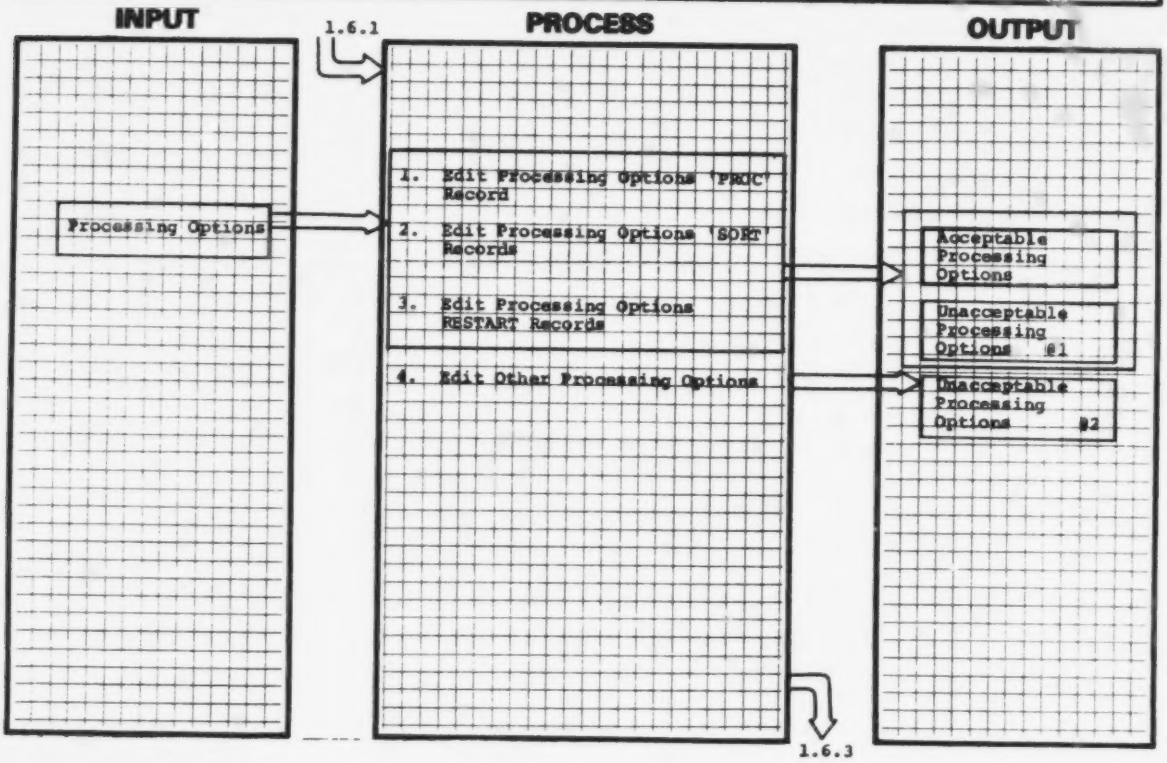


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of PWF. Only the file start position, data element length, and data element mnemonic are used.		PWSI060	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Public Water System Inv. Date: 1/6/77 Page: 1 of 1

Diagram No.: 1.6.2 Description: Edit Processing Options

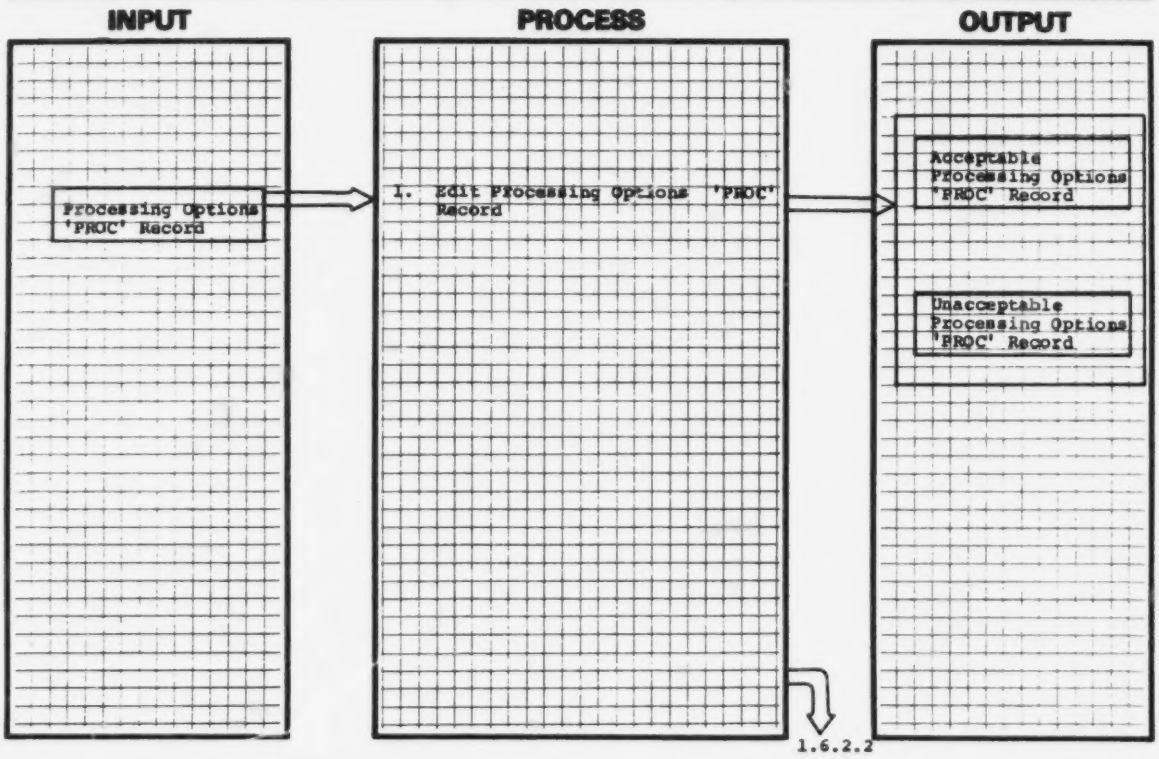


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Processing Options PROC record.	1.6.2.1	PWSI060	
2	Edit Processing Options SORT records.	1.6.2.2	PWSI060	
3	Edit Processing Options RESTART records.	1.6.2.3	PWSI060	
4	Edit other Processing Options.	1.6.2.4	PWSI060	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/6/77 Page: 1 of 1

Diagram No.: 1.6.2.1 Description: Produce Comprehensive Report

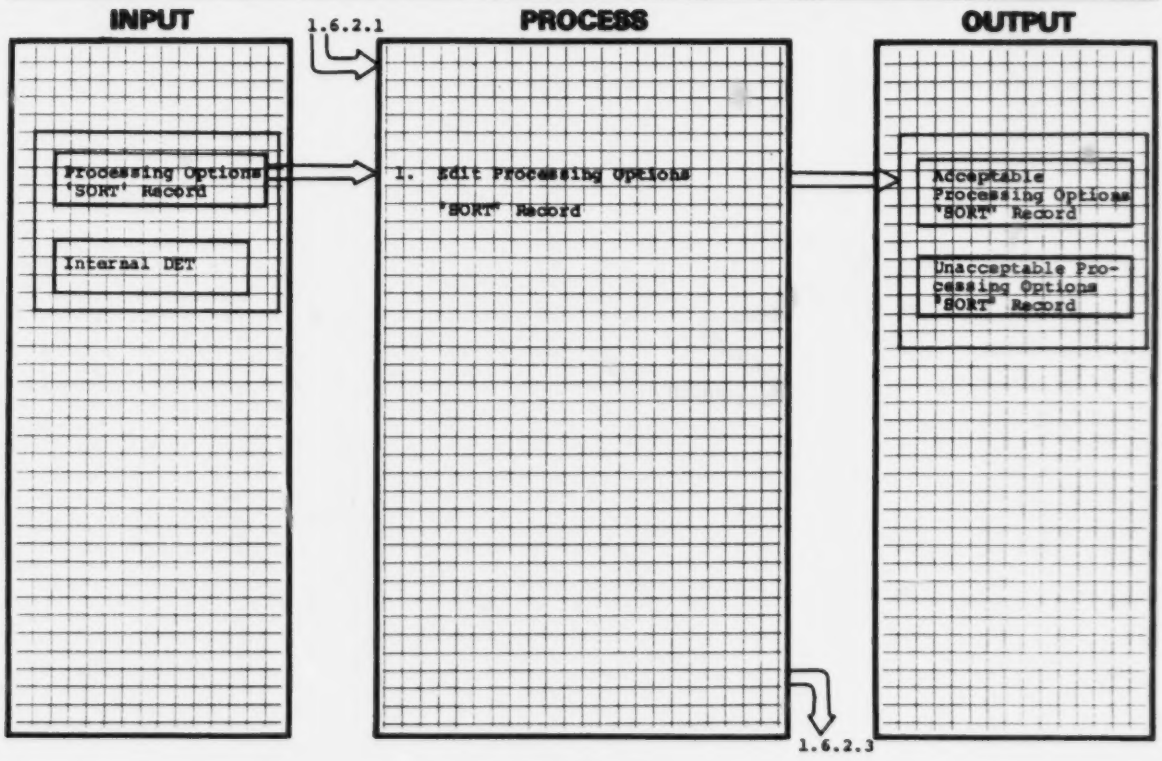


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record for 'PROC' as follows: a. Date (month, day, year) must be a valid date. This date is used in producing the report(s). b. Columns 14-18 indicate what type of file is being used as input. A "Y" or "N" for one of the following to determine the title of the report. 1) Column 14 - NEW PWF RECORDS 2) Column 15 - INCOMPLETE PWF RECORDS 3) Column 16 - PWF STATUS REQUESTS 4) COLUMN 17 - PWF RECORDS UNSUCCESSFULLY UPDATED 5) Column 18 - SELECTION EXTRACT FILE c. Column 19 indicates the type of report option to be selected. A "Y" in column 19 indicates the Public Water System Status and Entry Form (turnaround document) is to be produced. An "N" in column 19 indicates the Comprehensive Report (computer stock listing) is to be produced. The default option, if the Processing Option is blank or invalid, is to produce the Comprehensive Report. An error exists if: a. No 'PROC' record exists b. The date is invalid, then no date will appear on the report c. If there is more than one 'PROC' record. In this case, the second 'PROC' record is in error. The default option for columns 14-18, if the Processing Options are blank, invalid or filled with N's, is not to produce the report. If an error exists, then an error message is printed on the Standard Error Report.		PWSI060	204

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/6/77 Page: 1 of 2

Diagram No.: 1.6.2.2 Description: Edit the Processing Options 'SORT' Record



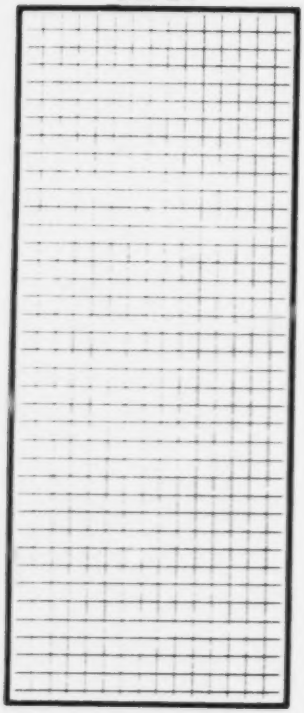
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. PWFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the PWFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, PWFI-SORT-MNEMONIC and PWFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. PWFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the PWFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MNEMONIC must be present. c. PWFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' or 'D'. If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MODE must be present. As each PWFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a lengtn exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		PWSI060	100 239 MSIS. 201

MODEL STATE INFORMATION SYSTEM

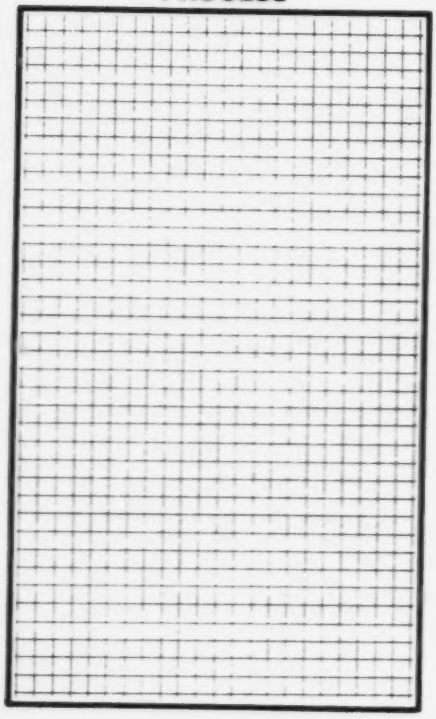
Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/6/77 Page: 2 of 2

Diagram No.: 1.6.2.2 Description: Edit the Processing Options 'SORT' Records

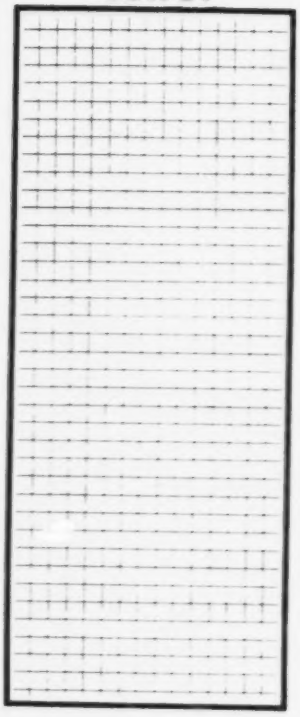
INPUT



PROCESS



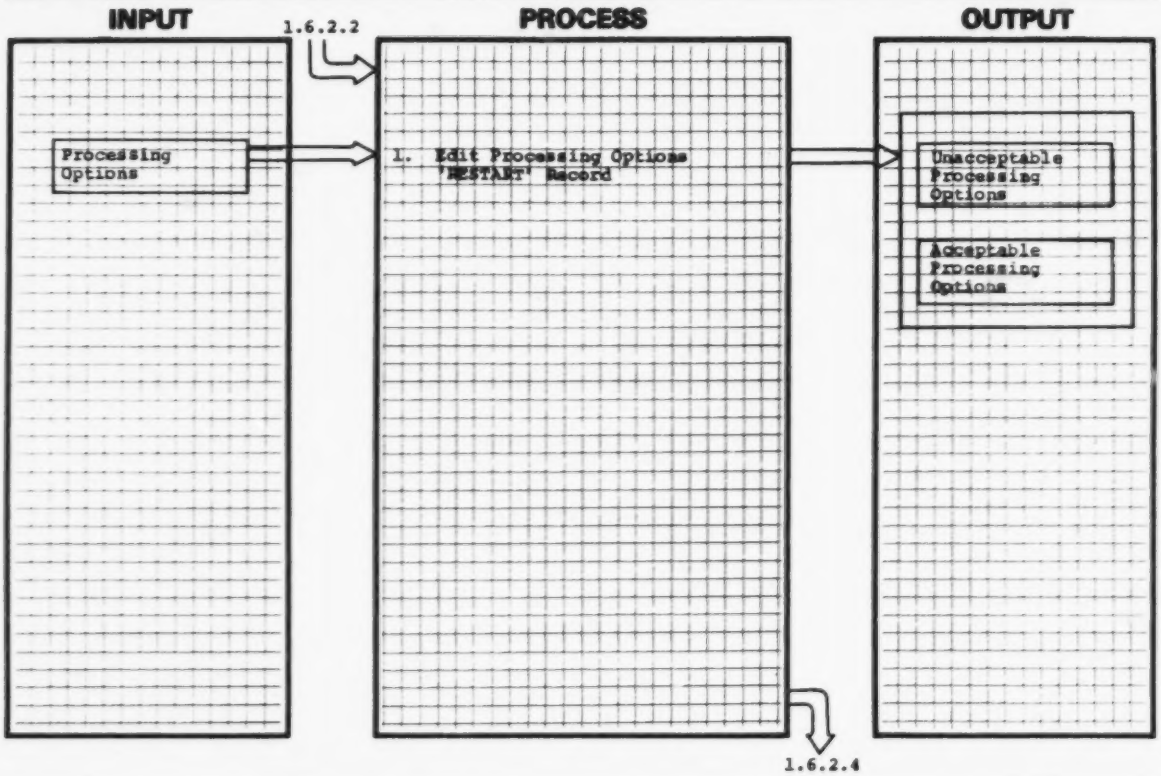
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The appropriate error messages that can appear on the Standard Error Report are: 'ERROR-MAXIMUM SORT-KEY SIZE HAS BEEN EXCEEDED' 'ERROR-SORT SEQUENCE FIELD NOT NUMERIC' 'ERROR-TWO SORT FIELDS HAVE THE SAME SEQUENCE NO' 'ERROR-SORT-OPTION MNEMONIC-NAME IS INVALID' 'ERROR-SORT MODE IS NOT ASCENDING or DESCENDING' 'ERROR-NONCONSECUTIVE SORT SEQUENCE VALUES'			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/6/77 **Page:** 1 of 1
Diagram No.: 1.6.2.3 **Description:** Edit Processing Options 'RESTART' Record

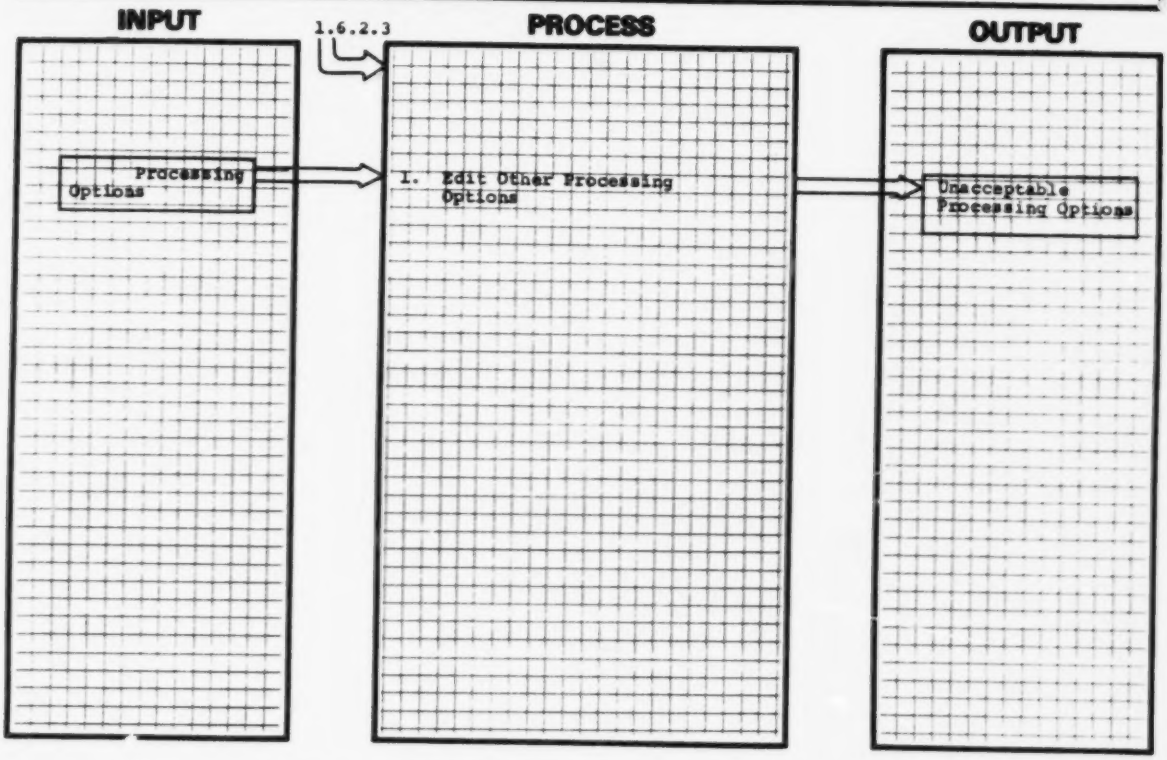


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'RESTART' in position 1-7. If no Restart Processing Options are present, processing continues as normal. If a Restart Processing Options record is present, the Restart Number must be numeric; otherwise, processing terminates. If more than one 'RESTART' record is present, processing is terminated.		PWSI060	105 205

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/6/77 Page: 1 of 1

Diagram No.: 1.6.2.4 Description: Edit Other Processing Options

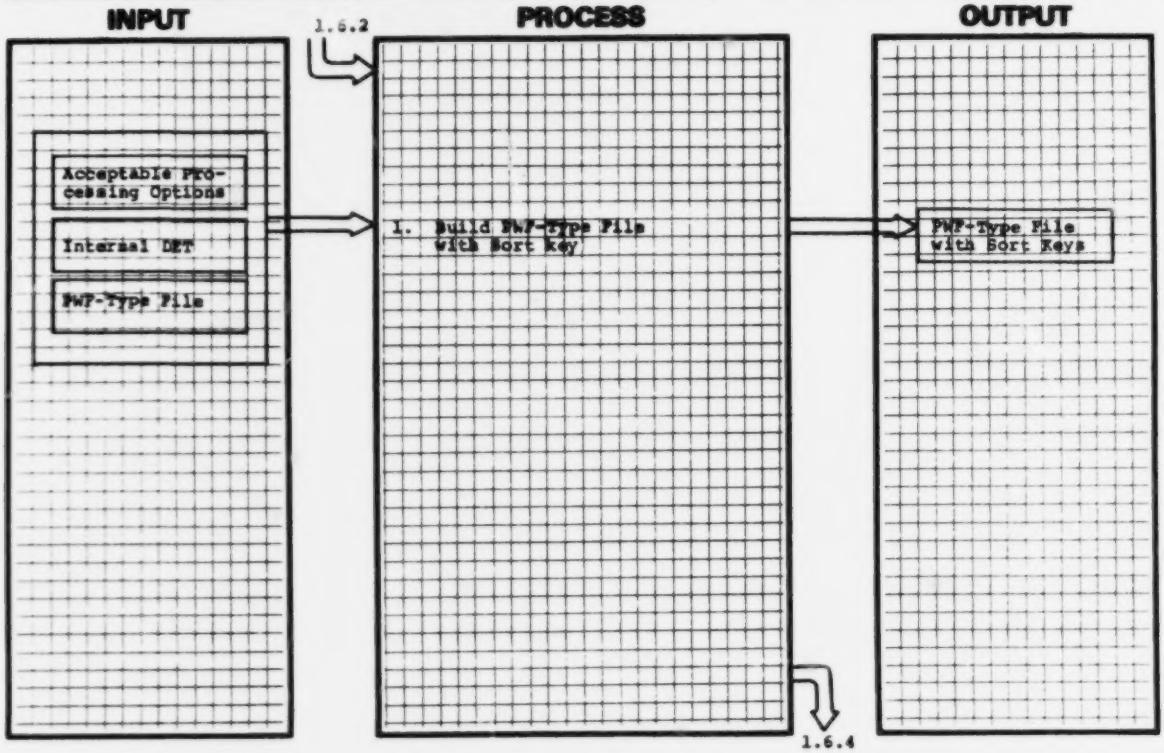


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Any Processing Options records which fall into this category are in error and should be written to the Standard Error Report and processing will be discontinued.		PWSI060	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/6/77 Page: 1 of 2

Diagram No.: 1.6.3 Description: Build PWF-Type File with Sort Key



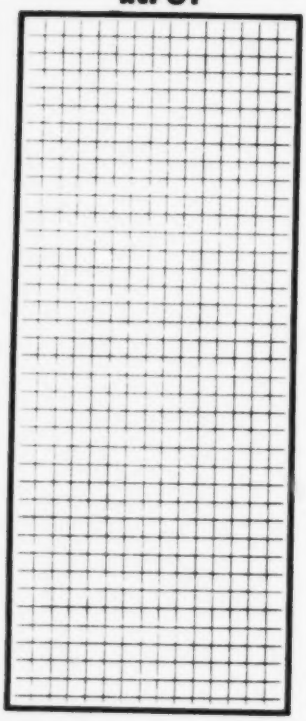
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Public Water Type File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) PWF-Type File record as an array of one character values. b. Match the PWFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the PWF-Type File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the PWF-Type File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 (2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no		PWSI060	200 239

MODEL STATE INFORMATION SYSTEM

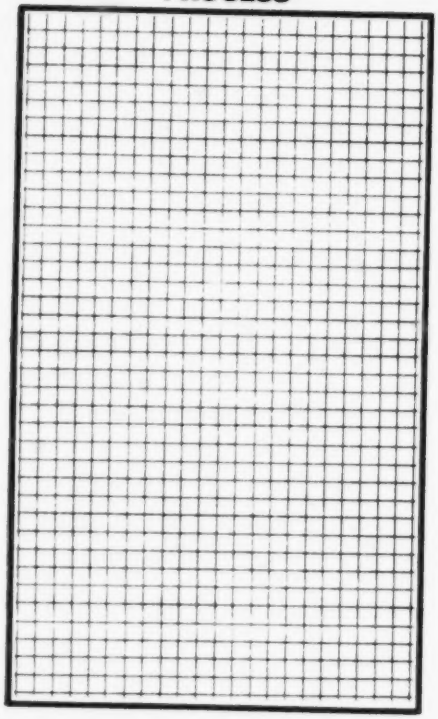
Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/6/77 Page: 2 of 2

Diagram No.: 1.6.3 Description: Build PWF-Type File with Sort Key

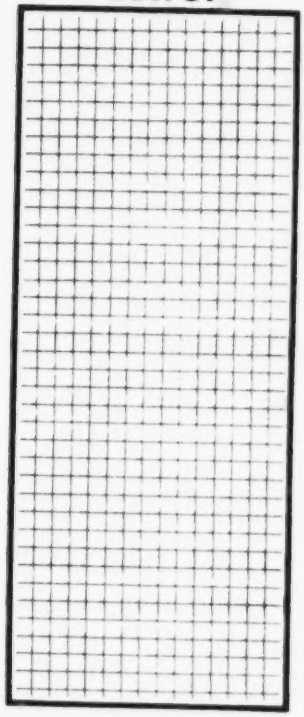
INPUT



PROCESS



OUTPUT

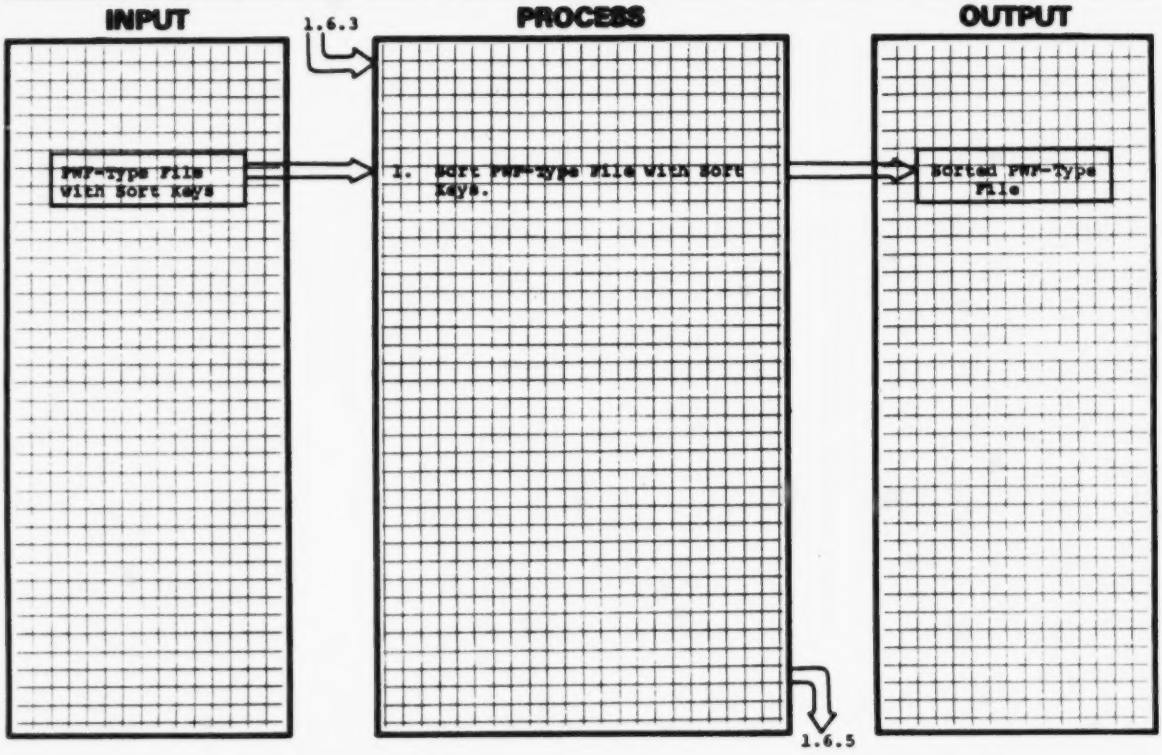


STEP	EXTENDED DESCRIPTION	REFERENCES		
		MPO	PROGRAM	OTHER
	unique starting position. In this case all possible values in the array must be checked as follows: (a) If the PWFI-SORT-Mode = 'A' (ascending), the lowest value of the data element must be used in building the sort key. (b) If the PWFI-SORT-MODE = 'D' (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the PWFI-SORT-MODE = 'A' (ascending), move the value obtained in c. to the proper location in the sort key. If the PWFI-SORT-MODE = 'D' *(descending), redefine* the data element value obtained in c. as binary, substract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the PWFI-SORT-SEQUENCE. NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/6/77 Page: 1 of 1

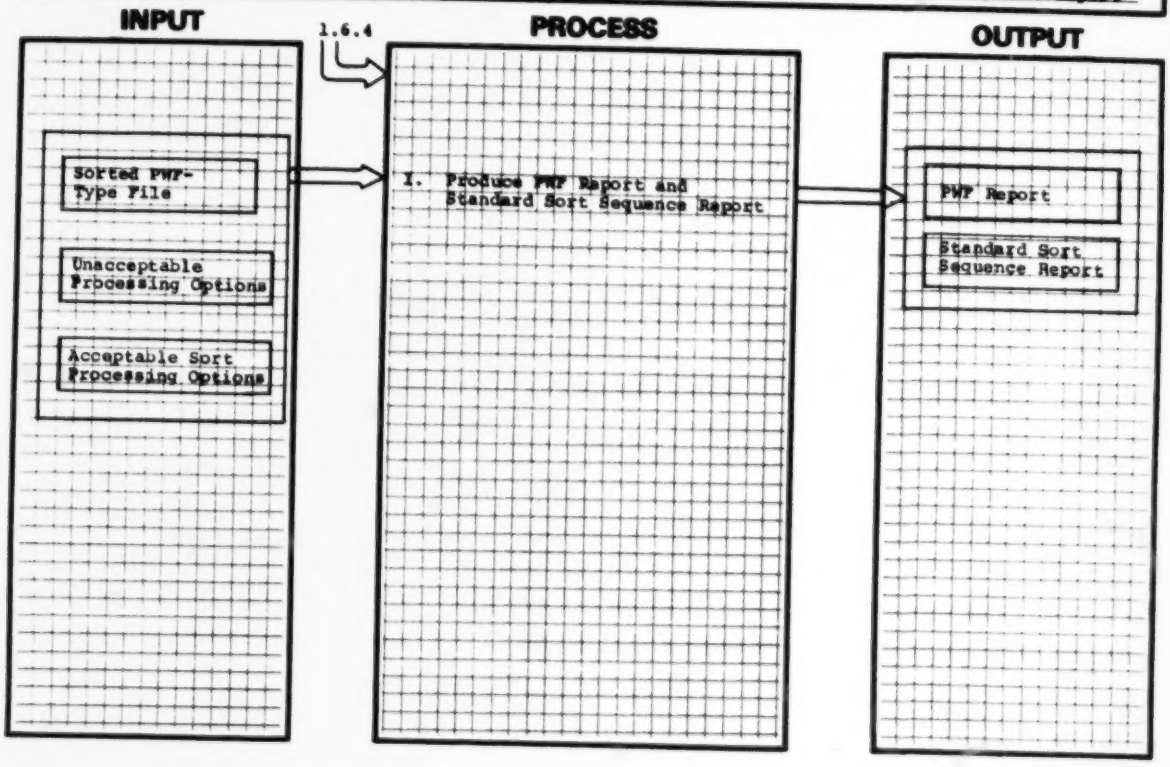
Diagram No.: 1.6.4 Description: Sort PWF-Type File with Sort Key



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the PWF-Type File in ascending sequence according to the thirty position sort key.		PWSI060	216

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/6/77 **Page:** 1 of 1
Diagram No.: 1.6.5 **Description:** Produce PWF Report and Standard Sort Sequence Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the PWF Report which will be one of the following: a. Public Water System Status and Entry Form (turnaround document). Print 5 pages of sample forms to aid in aligning the form on the printer. b. Comprehensive Report (computer stock listing) and the Standard Sort Sequence Report. If there were unacceptable Processing Options, then format MSIS.309 (Standard Error Report) will be printed instead of format 303 or 400. All Julian dates must be converted to calendar dates before printing. Show decimals in Variances and Exemptions MCL data: Example: If PWF-VAEX-MODIFIED-MCL equals 12345 and PWF-VAEX-MODIFIED-MCL-DEC equals 2, then MCL on the report would be 123.45 Note: If an acceptable 'RESTART' Processing Options record is present, a switch is set which causes those report pages with page numbers less than the page number specified on the 'RESTART' Processing Options record not to be printed. Once the page counter equals the page number on the 'RESTART' Processing Options record, this switch is turned off and normal report production begins.		PWSI060	303 400 MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Public Water System Inventory
PROGRAM NAME: PWSI070
DATE: January 12, 1977

I, OBJECTIVES:

The objective of this program is to maintain a history file of all changes and updates to the Public Water File (PWF). The history file is named the Public History File (PHF). If requested, the Public Water System Inventory Update Report is produced for the newest history updates or all the history updates since system implementation.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Data Element Table	DET-RECORD	MSIS.201
2.	Public History File	PHF-RECORD	PWSI.202
3.	Public History File Transaction Records	PHF-RECORD	PWSI.202

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	PHFI-PROC-RECORD	PWSI.106	PWSI.208
2.	Sort Options	PWFI-SORT-RECORD	PWSI.100	PWSI.239

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public History File	PHF-RECORD	PWSI.202
2.	Standard Error File	SEF-RECORD MSI-PROC-SEF-RECORD	MSIS.207 MSIS.203

B. Report Layouts:

NAME	EXHIBIT LAYOUT
1. Public Water System Inventory Update Report	PWSI.307
2. Standard Update Statistics Report	MSIS.300
3. Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not applicable

IV. FUNCTIONS:

1. Two internal Data Element Tables (DET's) are built: the Public Water File (PWF) internal DET and the Public History File (PHF) internal DET. The PWF internal DET will be used to secure the history code for the PWF data element in the PHF record. The PHF internal DET will be used to format the sort key for the intermediate sort file.

2. The Processing Options are read and edited. Any errors are written to the Standard Error Report. The PHF internal DET will be used to edit sort criteria. The first Standard Error File (SEF) record is built after all processing options have been edited.

3. The PHF transactions are merged with the PHF if the following criteria are met: a.) the transaction must have a corresponding record on the PWF internal DET, and b.) the history code on the PWF internal DET must show that the data element is supposed to be saved on the PHF. The only default occurs when there is no corresponding entry on the PWF internal DET. Then the transaction is merged with the PHF and an SEF record is created.

4. Depending on the Report Option, if no update report is to be produced, skip to step 8. Otherwise, if only current update records are to be reported, their current update date must equal the date in the Processing Options. If all records are to be reported, the updated Public History File (PHF) is used as the intermediate file and this step is skipped.

5. If a sort of the selected records is requested, a sort key is built for each of the selected Public

History File (PHF) Records using the PHF internal Data Element Table (DET) and the acceptable sort Processing Options. The sort key is placed at the beginning of each record.

6. The selected Public History File (PHF) Records with sort keys are sorted on the key created from Step 5.

7. The Public Water System Inventory Update Report is produced if the Processing Options so specify.

8. The Standard Update Statistics Report is produced at all times and will also contain error messages, if any. The Standard Sort Sequence Report is also produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

2. Sort Processing Options

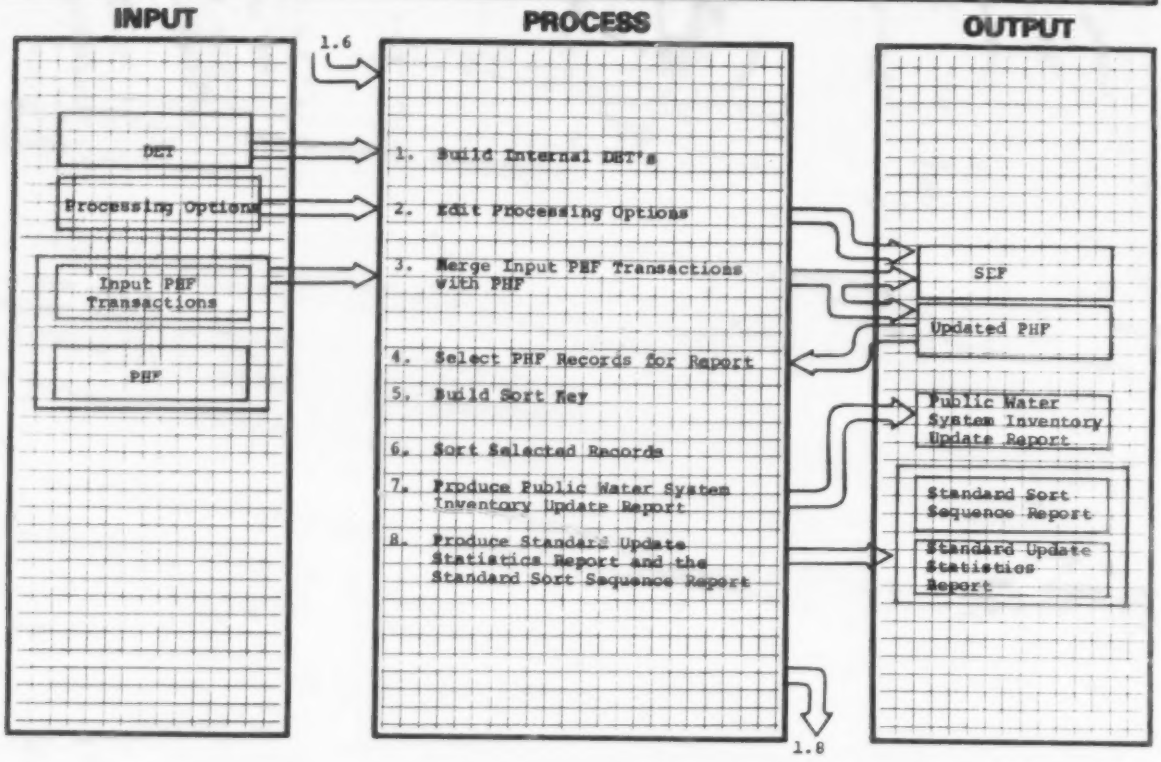
B. Data Element Descriptions:

1. Public History File

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Public Water System Inv. Date: 1/12/77 Page: 1 of 1

Diagram No.: 1.7 Description: Update PWSI History File

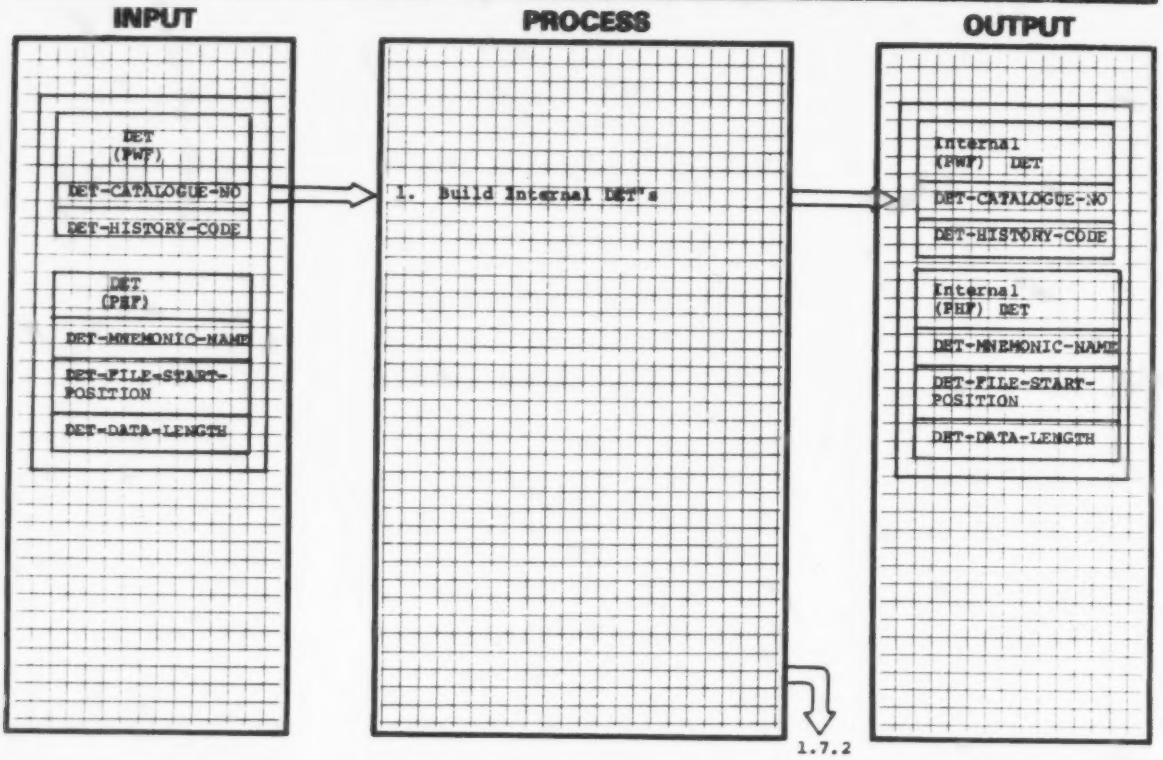


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Data Element Tables (DET).	1.7.1	PWSI070	
2	Edit the Processing Options PROC record for valid date and print option and SORT record(s) for valid sequence, mnemonic name, and mode. The Standard Error File (SEF) first record is built after all editing.	1.7.2	PWSI070	
3	Merge input Public History File (PHF) transactions with the PHF. All errors are written to the SEF.	1.7.3	PWSI070	
4	Select PHF records for report based on the Processing Options.	1.7.4	PWSI070	
5	Build the Sort Key using valid Processing Sort Options and the PHF internal DET.	1.7.5	PWSI070	
6	Sort the records to be printed.	1.7.6	PWSI070	
7	Produce the Public Water System Inventory Update Report.	1.7.7	PWSI070	
8	Produce the Standard Update Statistics Report and the Standard Sort Sequence Report.	1.7.8	PWSI070	
	NOTE: Error codes are located in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/12/77 Page: 1 of 1

Diagram No.: 1.7.1 Description: Build the Internal DET's

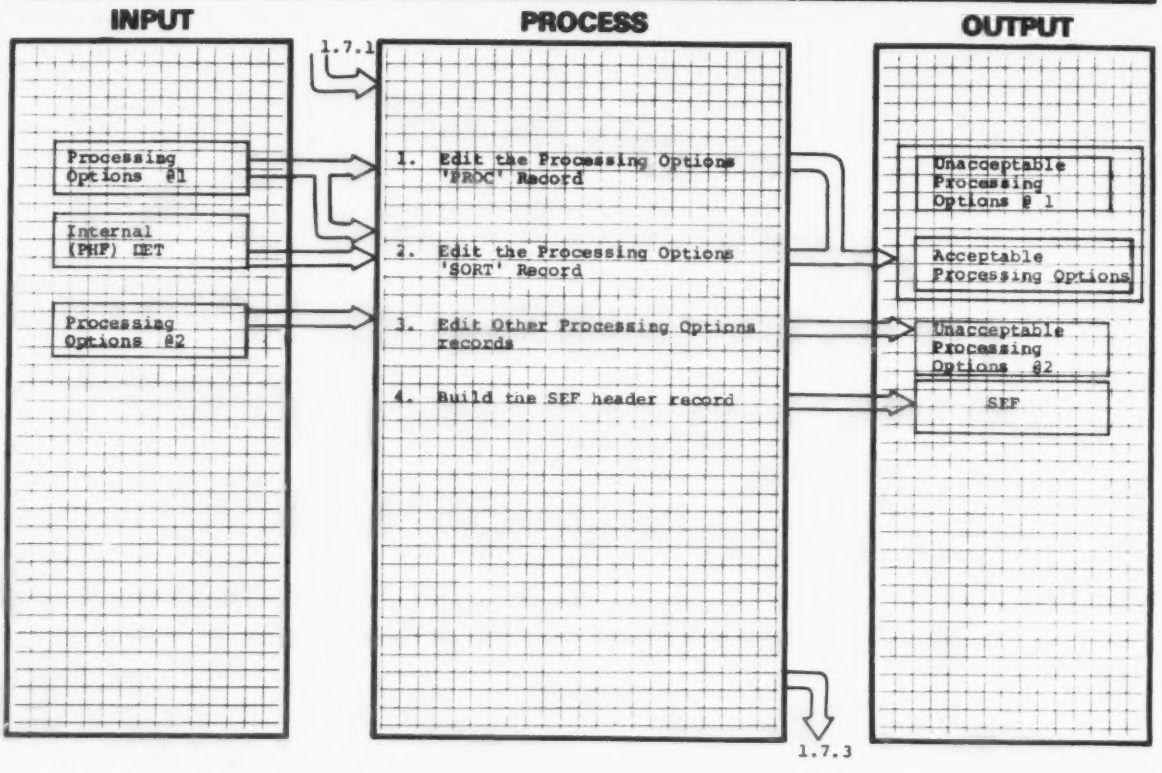


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The internal Data Element Tables (DET) are built for both the Public Water File (PWF) and Public History File (PHF). The PWF data elements are: a. DET-CATALOGUE-NO-data element catalogue number b. DET-HISTORY-CODE-code which determines whether the data element is kept on the PHF. A 'Y' code means the data element is kept on the PHF. An 'N' code means the data element is not saved on the PHF. The PHF data elements are: a. DET-MNEMONIC-NAME-data element mnemonic name used for building the sort key. b. DET-FILE-START-POSITION, which contains the starting location of the respective data element in the PHF. c. DET-DATA-LENGTH, which contains the length of data element in the PHF.		PWSI070	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 1/12/77 **Page:** 1 of 1

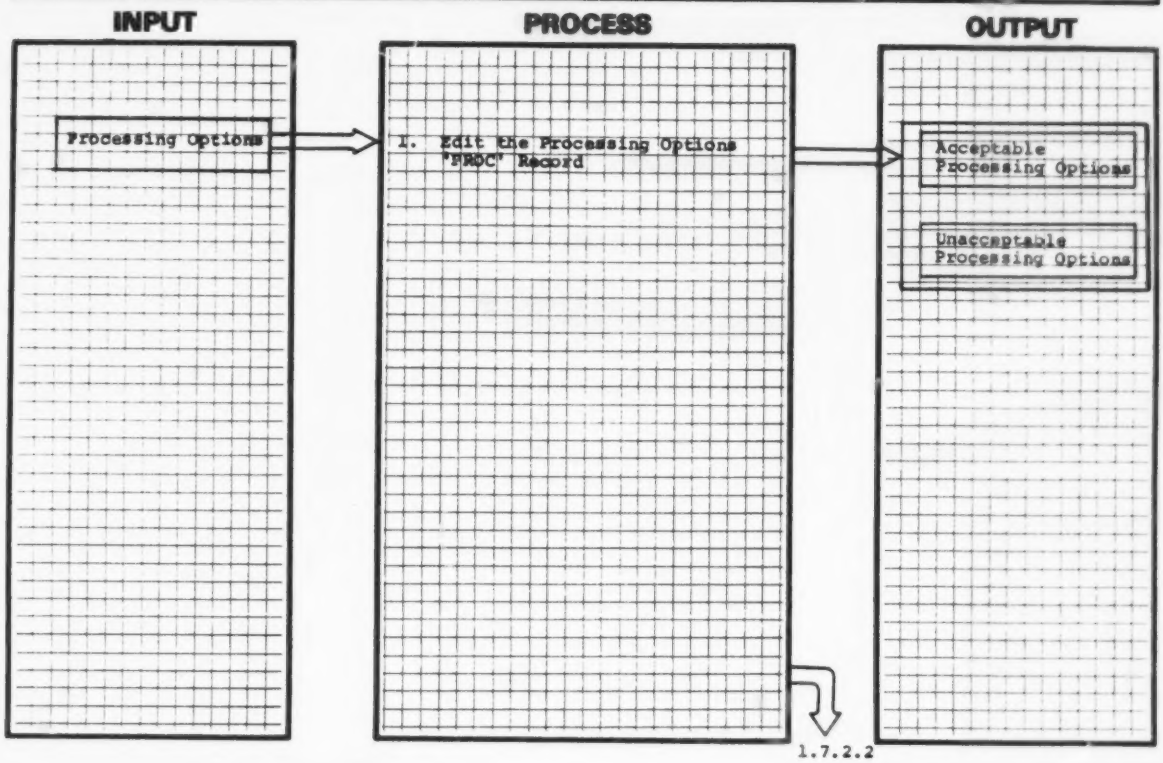
Diagram No.: 1.7.2 **Description:** Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'PROC' in cc 1-4. The current date and report option are edited.	1.7.2.1	PWSI070	
2	Edit the Processing Options record(s) with 'SORT' in cc 1-4. The sort sequence(s), sort mnemonic name(s), and sort mode(s) are edited.	1.7.2.2	PWSI070	
3	Edit all other records thougnt to be Processing Options records. These records are in error and a message is entered into the Standard Error Report. (See MSIS.309)	1.7.2.3	PWSI070	
4	After all Processing Options records have been edited, the Standard Error File (SEF) header record is built and written to the SEF.	1.7.2.4	PWSI070	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/12/77 **Page:** 1 of 1
Diagram No.: 1.7.2.1 **Description:** Edit the Processing Options 'PROC' Record

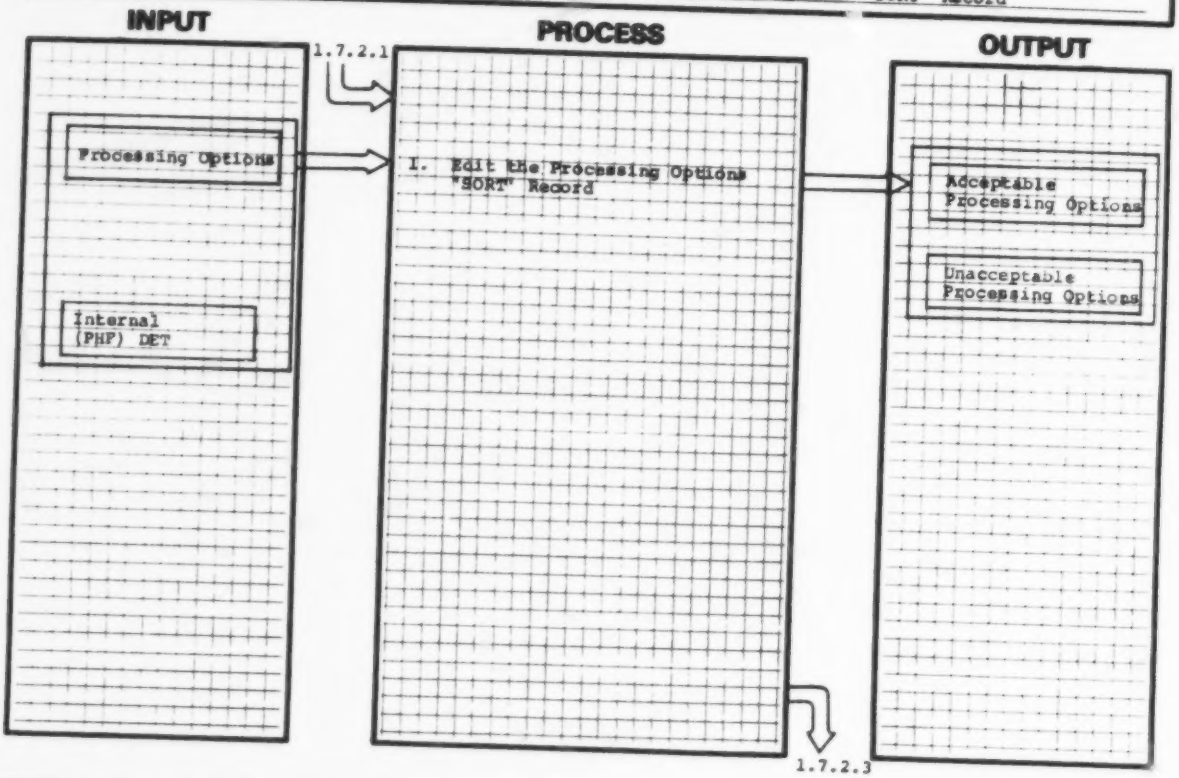


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options 'PROC' record is edited for validity of data elements. They are: a. Current date. b. Report option code, which are: (1) Print only the last update transactions produced from program PWSI010 (2) Print all the Public History File (PHF) records. (3) Do not print an update report. If the date is unacceptable, put blanks in the date field on the Public Water System Inventory Update Report and the Update Statistics Report. If the report option code is not one of the above, then default to the no report option b.(3). Note: All edit errors produce an error message on the Standard Error Report. If no 'PROC' record exists or more than one 'PROC' record exists, the processing is terminated after all processing options records have been edited.		PWSI070	106 208 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/12/77 **Page:** 1 of 1

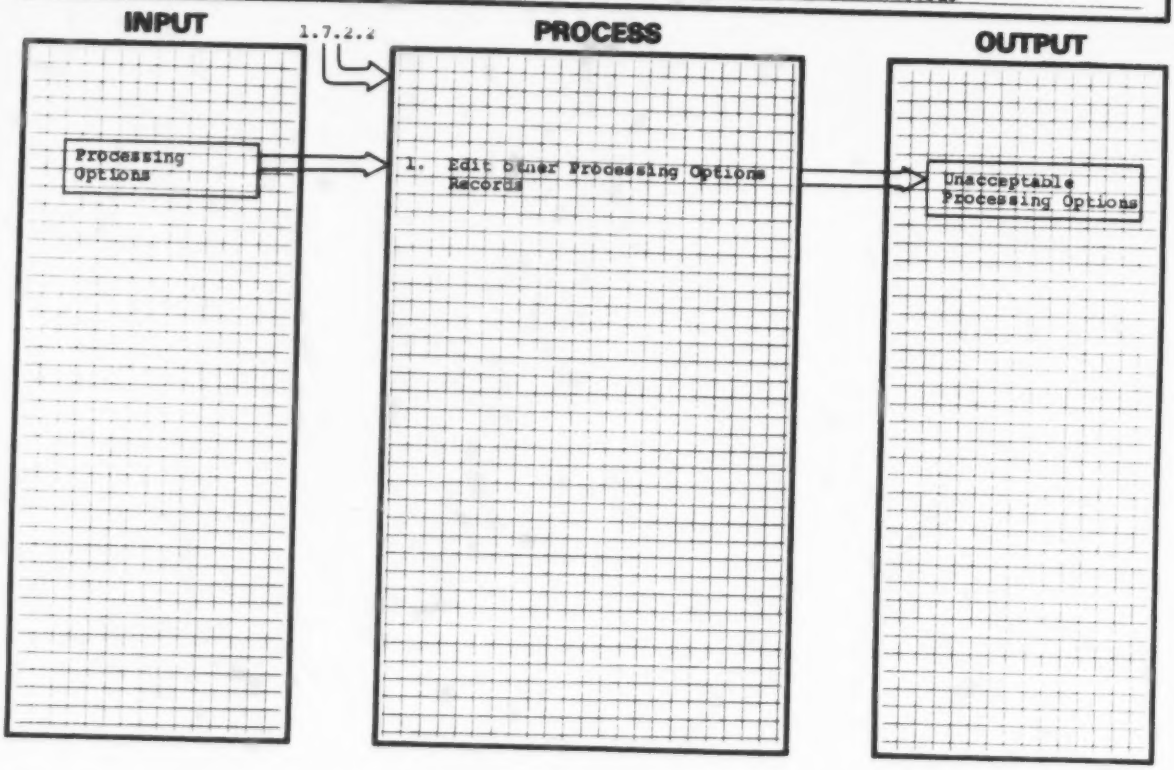
Diagram No.: 1.7.2.2 **Description:** Edit the Processing Options 'SORT' Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		MIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. PWFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the PWFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, PWFI-SORT-MNEMONIC and PWFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. PWFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the PWFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MNEMONIC must be present. c. PWFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' or 'D'. If PWFI-SORT-SEQUENCE is non-blank, then PWFI-SORT-MODE must be present. As each PWFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Update Statistics Report and processing will be terminated.	1.2.1.4	PWSI070	100 239

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/12/77 **Page:** 1 of 1
Diagram No.: 1.7.2.3 **Description:** Edit Other Processing Options Records

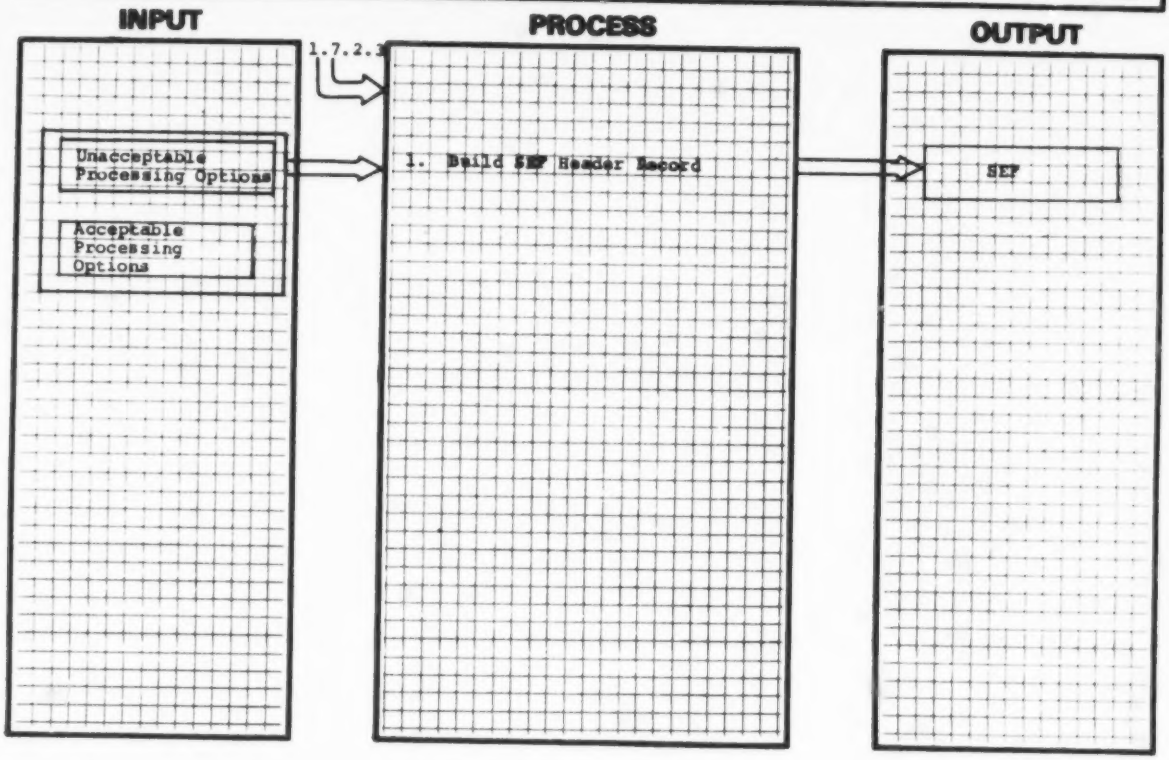


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit all other records thought to be Processing Options records. These records are in error and are reported to the Standard Error Report portion of the first report produced by this package.		PWSI070	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/12/77 Page: 1 of 1

Diagram No.: 1.7.2.4 Description: Build the SEF Header Record

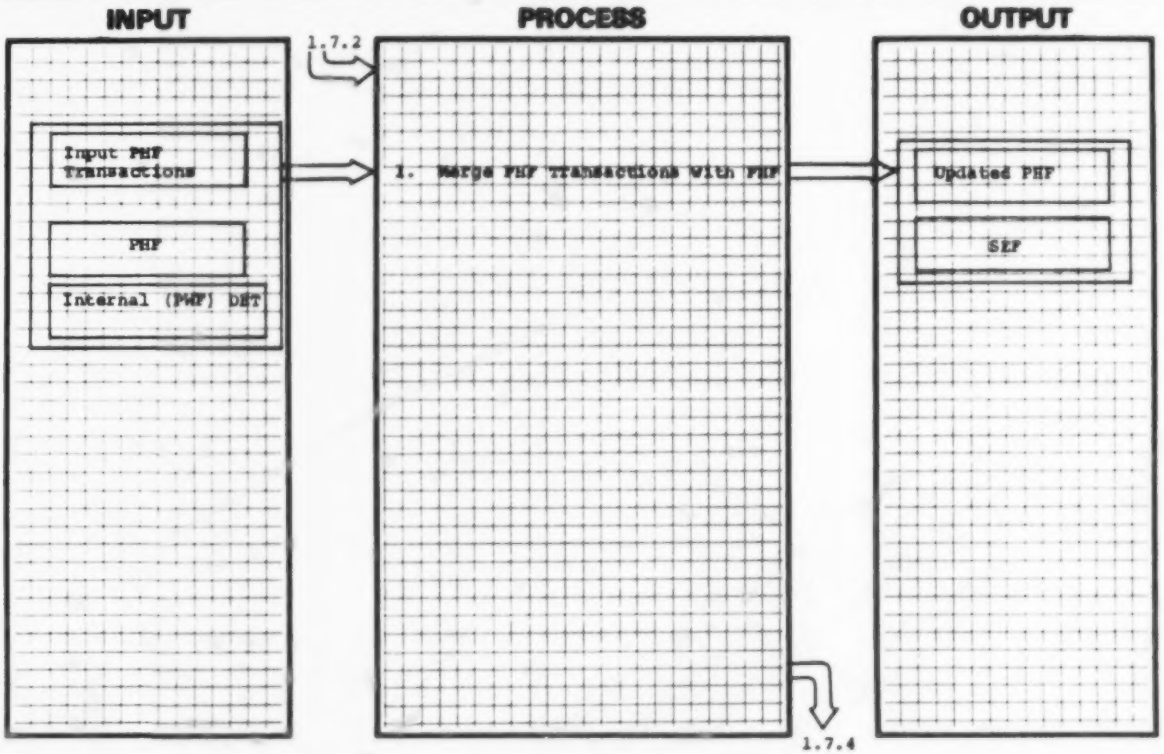


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	A header for the Standard Error File (SEF) is built to supply the standard error routine with information about the Public History File (PHF) update run. The description of the record is: cc 1-4 - MSI-PROC-SEF-ID contains 'LOW-VALUES' and identifies the PROC record. cc 5-10 - MSI-PROC-SEF-DATE contains the 6-digit current date from the input processing options 'PROC' record. cc 11 - MSI-PROC-SEF-OUTPUT contains an 'N'. cc 12 - MSI-PROC-SEF-FIELD-SELECT contains an 'N'. cc 13-78 is unused space. cc 79-80 - MSI-PROC-SEF-FILE-ID contains the 2-position file code 'PH' that was being updated to produce this SEF. Note: If processing will be terminated due to errors in the Processing Options, then only put 'LOW-VALUES' in cc 1-4 and leave the rest of the record blank.		PWSI070	MSIS. 208

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/12/77 Page: 1 of 1

Diagram No.: 1.7.3 Description: Merge PHF Transactions with the PHF

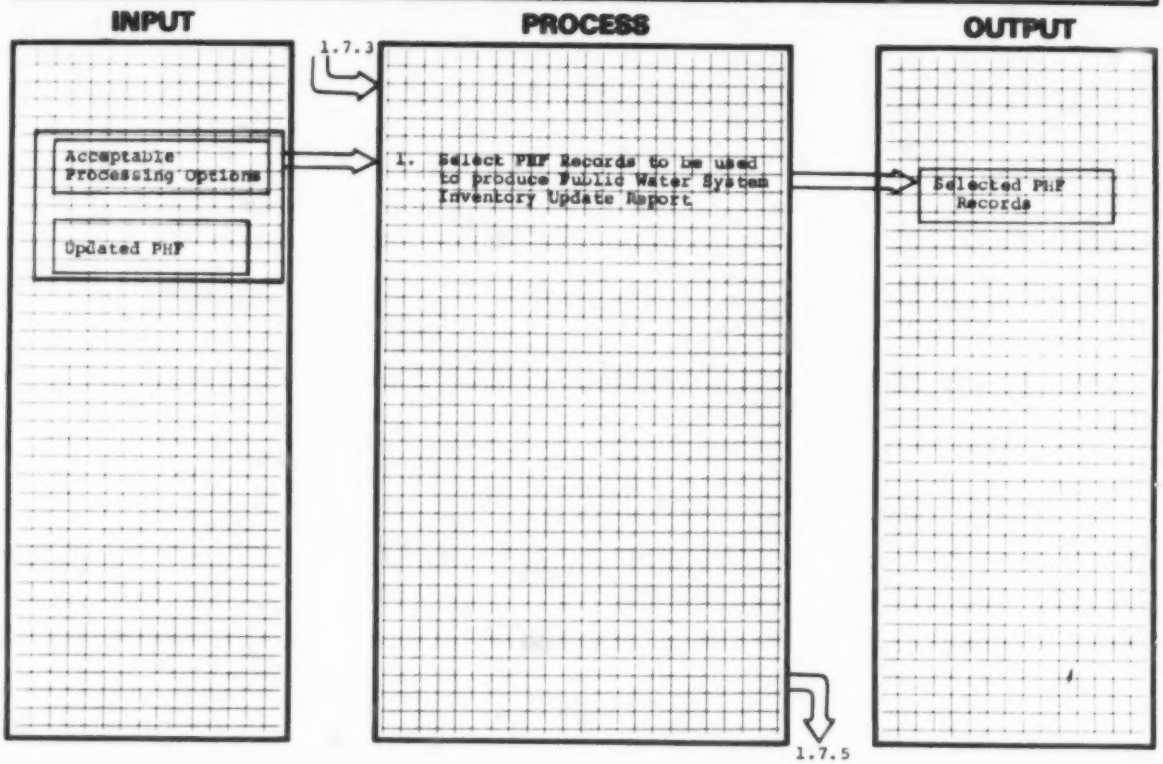


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The input Public History File (PHF) transactions are merged with records from the PHF. The Public Water File (PWF) internal Data Element Table (DET) is used as follows: a. DET-CATALOGUE-NO is used as a key corresponding to the PHF-DATA-ELEMENT-CODE on the PHF. b. DET-HISTORY-CODE is used to determine whether or not the element is to be merged with the PHF. A 'Y' means it is to be merged, an 'N' means it is not to be merged. If there is no corresponding DET-CATALOGUE-NO or the DET-HISTORY-CODE is invalid, then the record is written to both the Standard Error File (SEF) and PHF. The update process is continued to the next input PHF transaction. Note: The error code to be written to the SEF is 105. Note: If the catalogue number on a PHF input transaction equals 'LOW VALUES', then the input transaction, as well as all following transactions with the same PWS-ID is not merged into the Updated PHF and is not counted in any of the update statistics.		PWSI070	202 MSIS. 207

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/12/77 **Page:** 1 **of** 1

Diagram No.: 1.7.4 **Description:** Select PHF Records for the Report

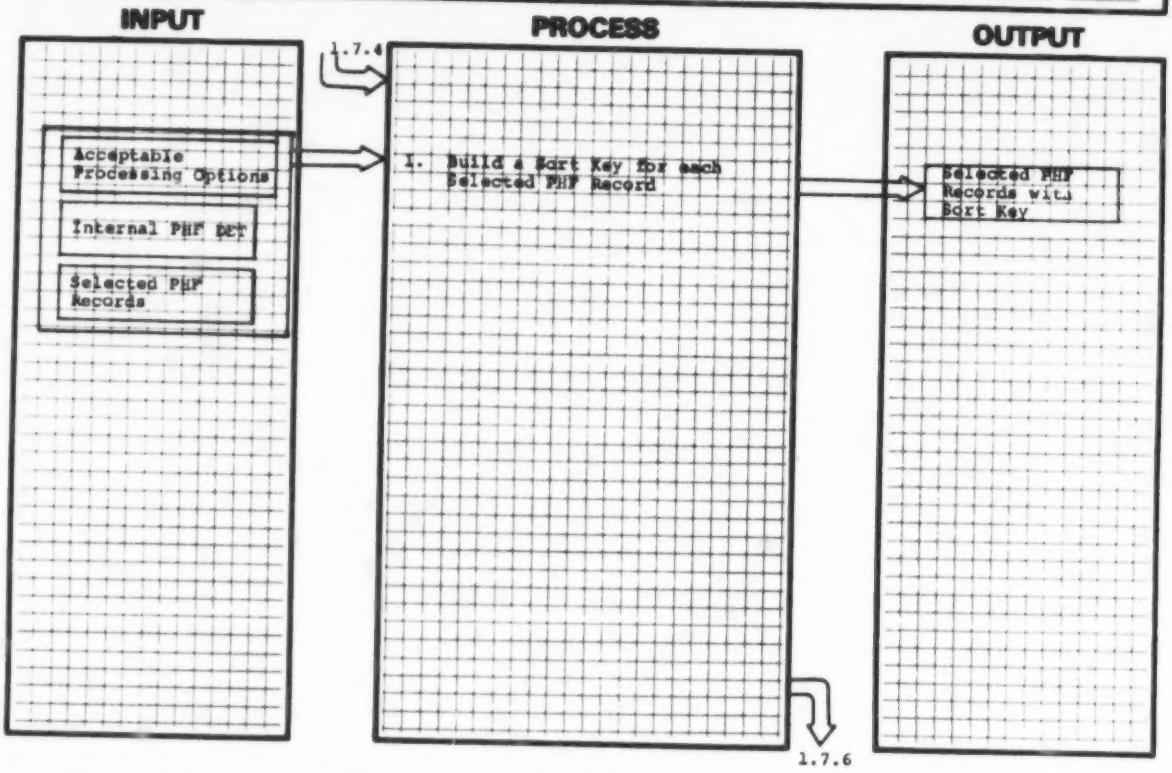


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The edited 'PROC' option is used to determine what records are to be printed on the Public Water System Inventory Update Report. If PHFI-REPORT-OPTION is equal '1', only those Public History File (PHF) records which have their PHF-CUR-UPDATE-DATE equal PHFI-PROC-DATE will be written to the intermediate file. If PHFI-REPORT-OPTION is equal '2', the entire Updated PHF will be used in the Selected PHF file. If PHFI-REPORT-OPTION is equal '3', no update report is to be created and only the Public History File Update Statistics Report is created (1.7.8) and the next three steps are skipped.		PWSI070	202 208

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/12/77 **Page:** 1 of 2

Diagram No.: 1.7.5 **Description:** Build a Sort Key



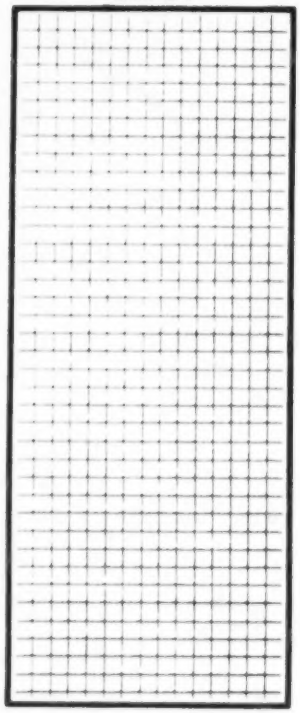
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Selected Public History File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Selected Public History File record as an array of one character values. b. Match the PWFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Selected Public History File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Selected Public History File. c. In order to obtain a value to be used in building the sort key, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the PWFI-SORT-MODE = 'A' (ascending), move the value obtained in c. to the proper location in the sort key. If the PWFI-SORT-MODE = 'D', redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the PWFI-SORT-SEQUENCE.		PWSI070	202 239

MODEL STATE INFORMATION SYSTEM

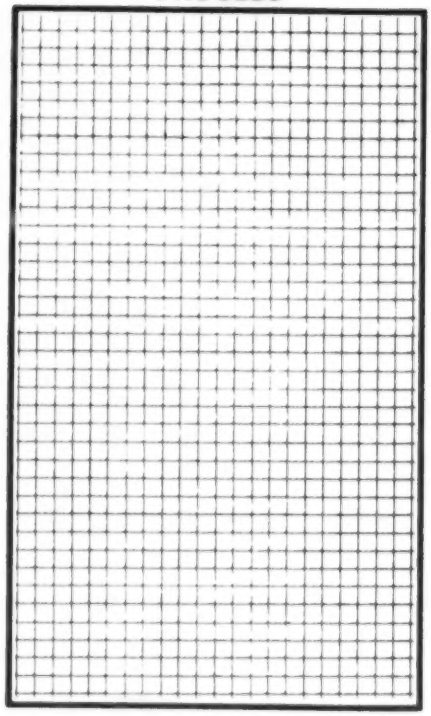
Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1/12/77 Page: 2 of 2

Diagram No.: 1.7.5 Description: Build a Sort Key

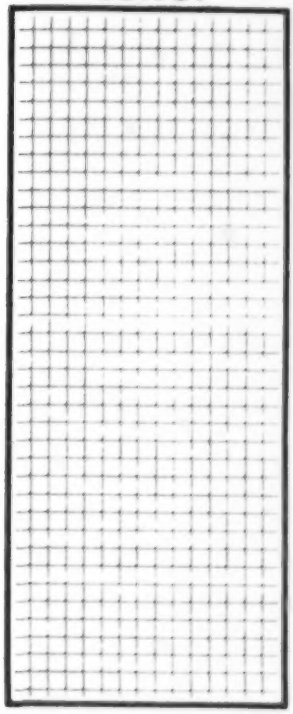
INPUT



PROCESS



OUTPUT

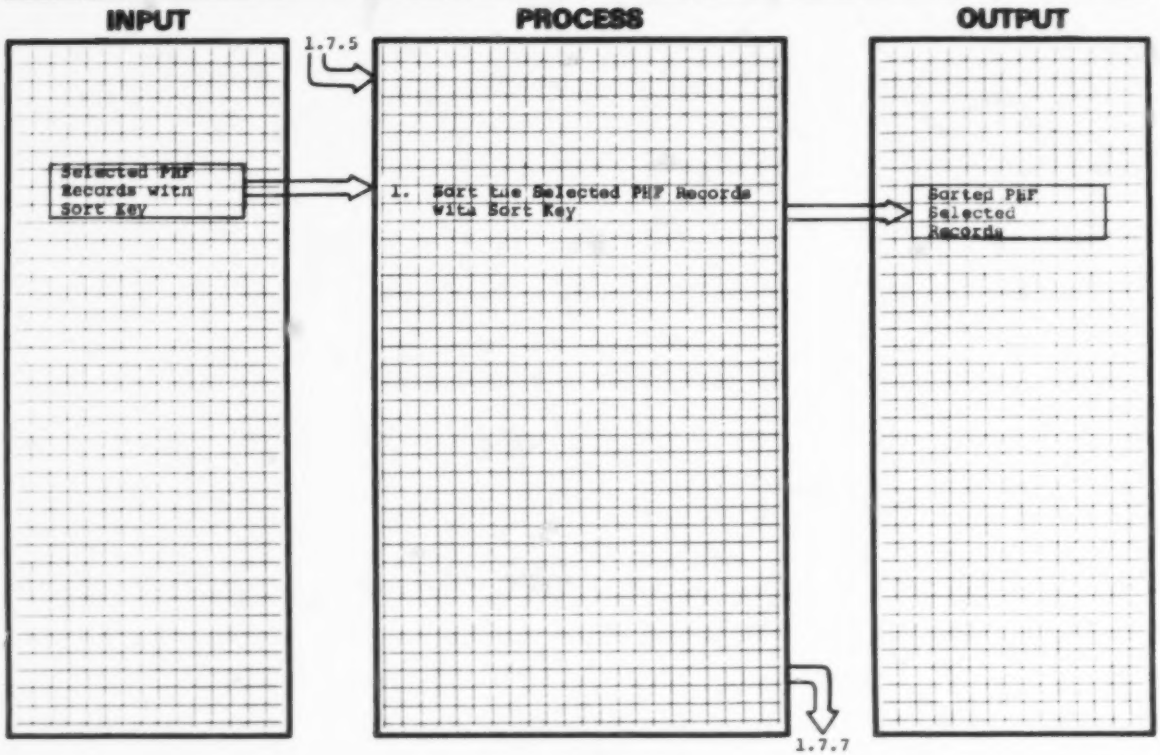


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Note: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/12/77 **Page:** 1 of 1

Diagram No.: 1.7.6 **Description:** Sort Selected Records

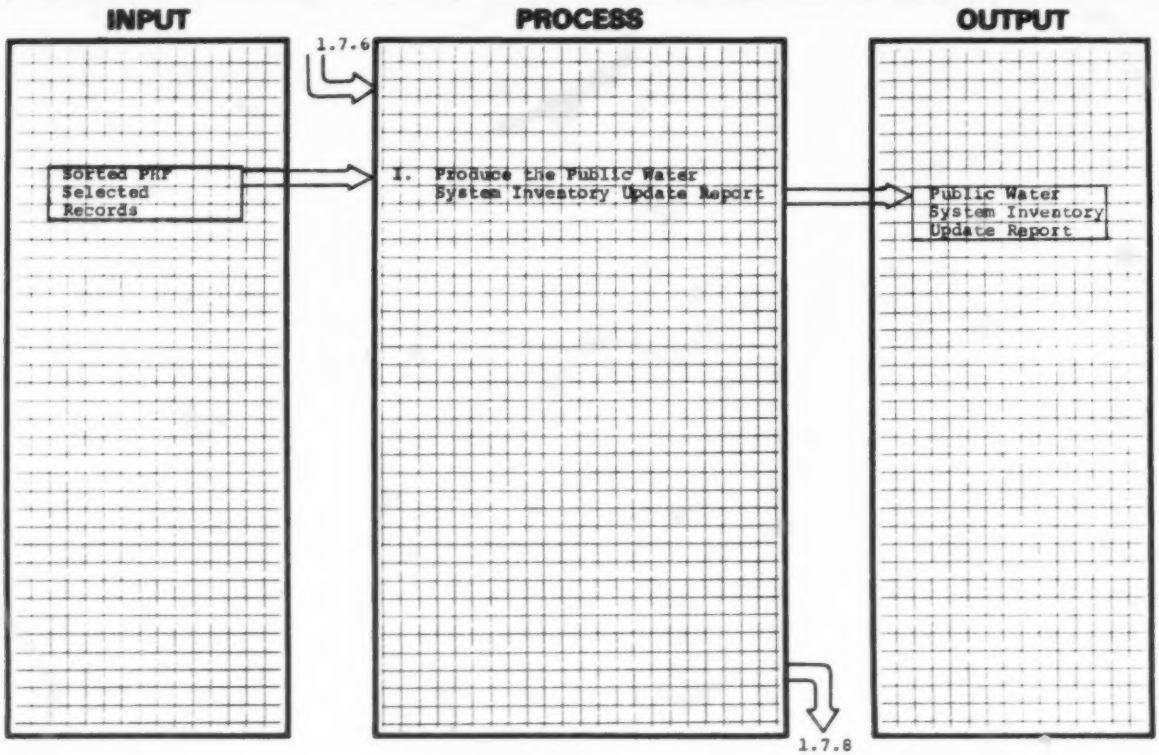


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Selected Public History File in ascending sequence according to the thirty position sort key. Note: The sort is always performed.		PWSI070	217

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/12/77 **Page:** 1 **of** 1

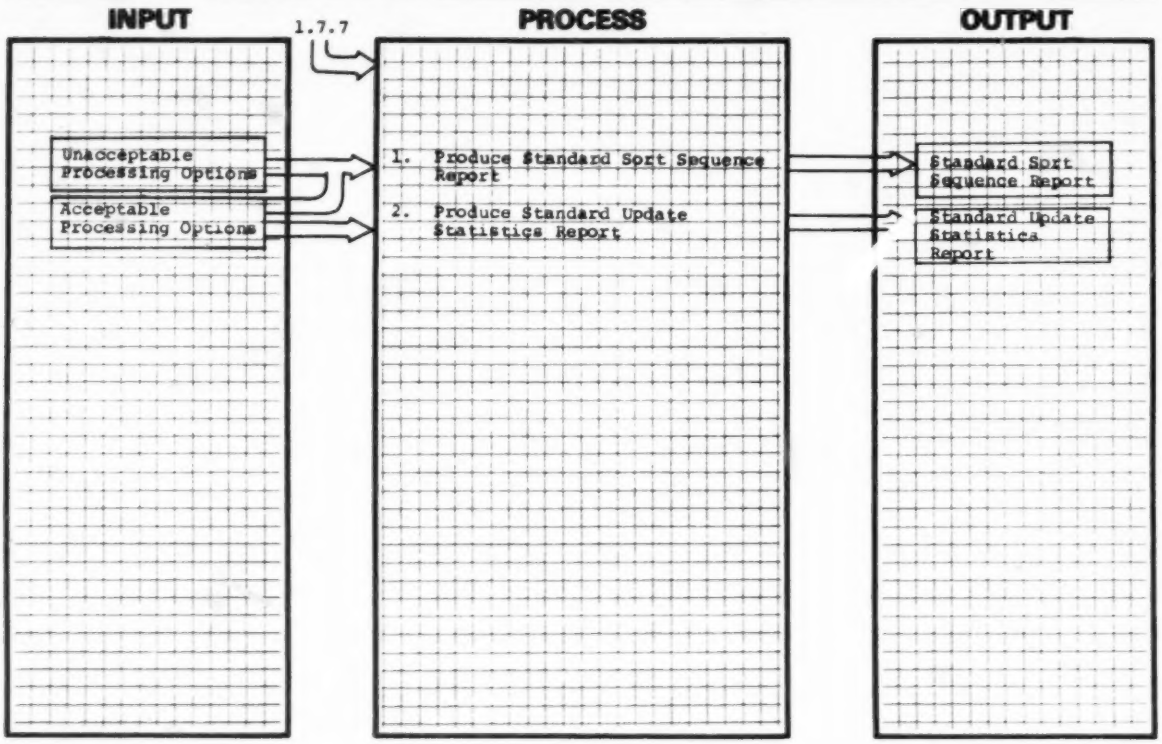
Diagram No.: 1.7.7 **Description:** Produce Public Water System Inventory Update Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The sorted Public History File (PHF) Selected records are used to produce the Public Water System Inventory Update Report. The report will be either the current update records or all of the PHF Update records. If no report option is requested, then the Public Water System Inventory Update Report is not produced.		PWSI070	307

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1/12/77 **Page:** 1 of 1
Diagram No.: 1.7.8 **Description:** Produce Standard Update Statistics Report and the Standard Sort Sequence Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If there were valid edited Sort Processing Options, then the Standard Sort Sequence Report is produced. The current date from the 'PROC' Processing Options record is used. If there were any errors in the Processing Options records, then the Standard Error Report is produced preceding the Standard Sort sequence report.		PWSI070	MSIS. 311 MSIS. 309
2	The Standard Update Statistics Report is always produced giving update totals and original totals on the Public History File (PHF).		PWSI070	MSIS. 300

NARRATIVE

SUBSYSTEM: Public Water System Inventory Subsystem
PROGRAM NAME: PWSI080
DATE: 11/02/76

I. OBJECTIVE:

The objective of this program is to select records from the Public History File (PHF) on the selection criteria entered on the Selection Form. The selected PHF records are sorted, and the Public History File Selection Report is produced. The Standard History Selection Statistics Report is also produced.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Data Element Table	DET-RECORD	MSIS.201
2.	Public History File	PHF-RECORD	PWSI.202

B. Processing Options:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	PHFI-PROC-RECORD	PWSI.101	PWSI.240
2.	Selection Form	PHFI-SELECT-1-RECORD	PWSI.107	PWSI.207
3.	Selection Form	PHFI-SELECT-2-RECORD	PWSI.108	PWSI.210
4.	Sort Options	PHFI-SORT-RECORD	PWSI.100	PWSI.239

III. OUTPUTS:

Reproduced from best available copy.

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Selection Statistics Report	MSIS.306
2.	Public History File Selection Report	MSIS.309
		PWSI.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. The Data Elements Table (DET) is used to build an internal DET. The internal DET is used for editing the Processing Options records and for building the sort key.

2. There are four types of Processing Options records which are needed in the Selection Process. Each type is edited for acceptable values and those values are retained and utilized in the following functions.

3. Based on the criteria established in the Processing Options records, Public History File (PHF) records are examined to determine if they should be selected.

4. If a PHF record is selected, then a selected PHF record is built. This function includes building a SORT key based on the criteria established by the SORT Processing Options.

5. When the entire PHF has been examined and the Selected PHF is complete, the Standard Selection Statistics Report is produced which shows all the selection criteria, how many records were selected, and any sort options.

6. The Selected PHF is sorted on the sort key.

7. The sorted Selected PHF is printed on a detailed report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

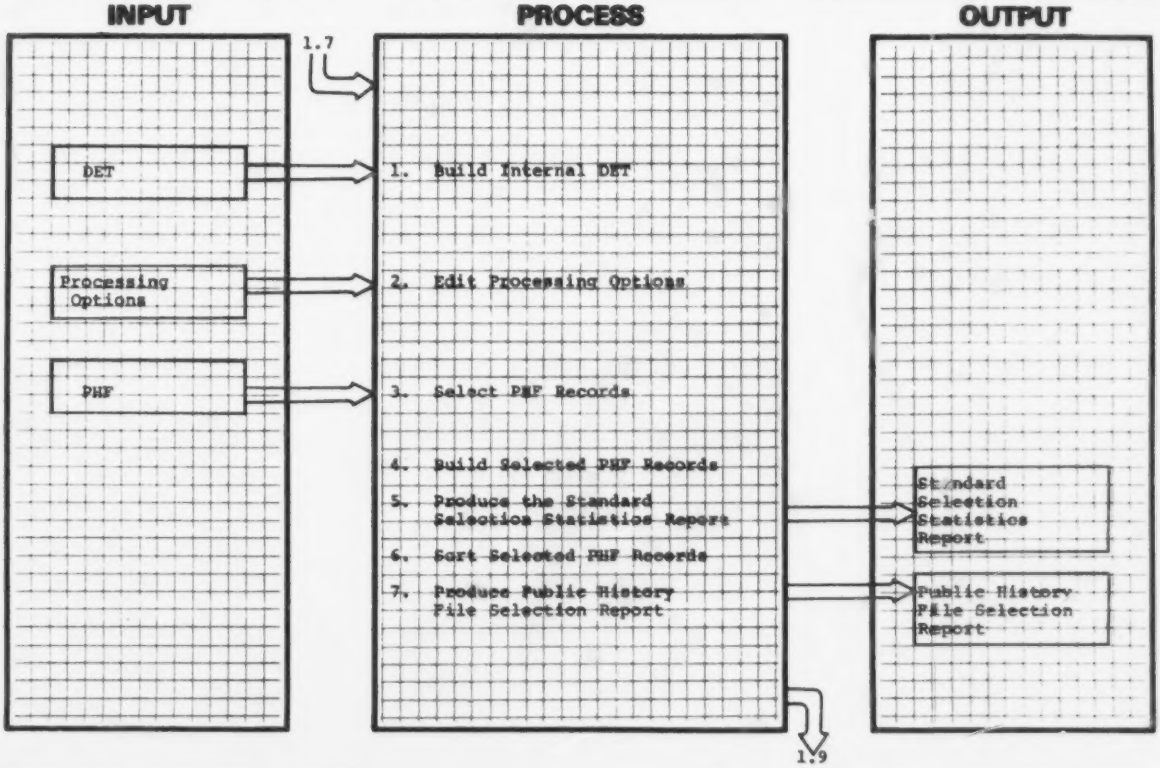
1. Processing Options
2. Selection Form - Definition of Data Elements
3. Selection Form - Definition of Logic for Selection
4. Sort Options

B. Data Element Descriptions:

1. Public History File

MODEL STATE INFORMATION SYSTEM

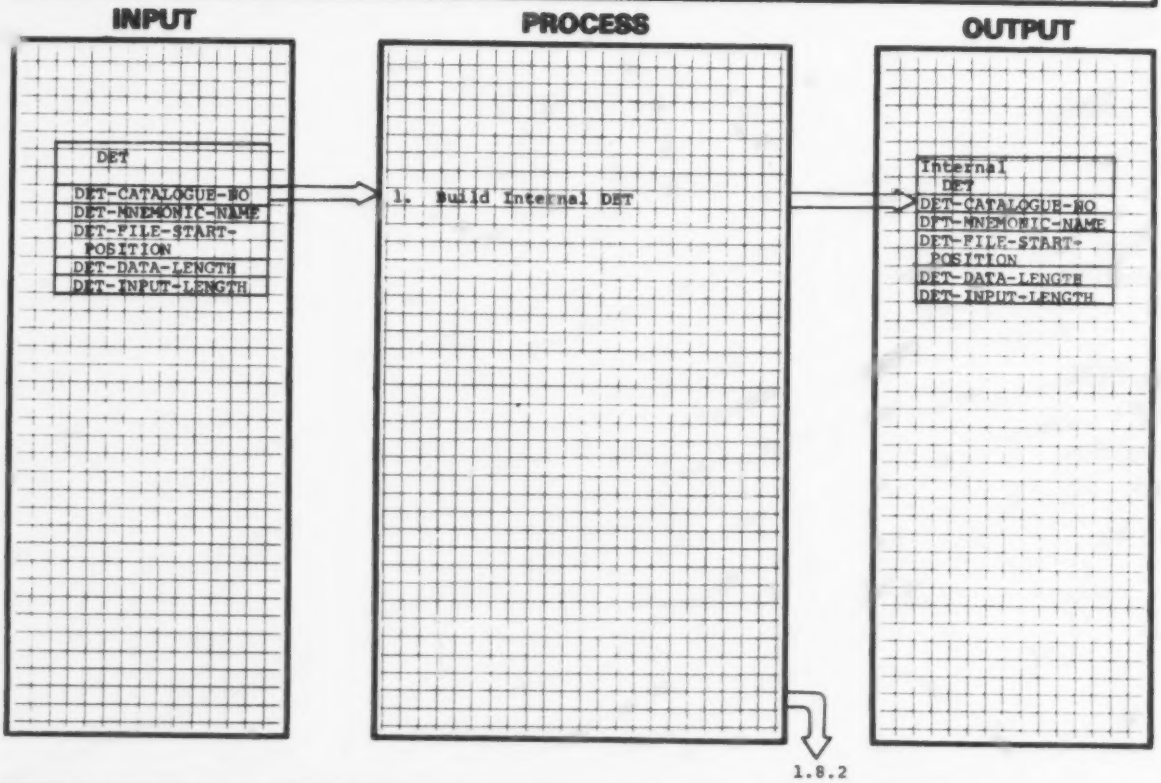
Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 12-14-76 **Page:** 1 of 1
Diagram No.: 1.8 **Description:** Select from PHF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Data Element Table (DET).	1.8.1	PWSI080	
2	Edit the Processing Options.	1.8.2	PWSI080	
3	Select the Public History File (PHF) Records.	1.8.3	PWSI080	
4	Build the Selected PHF Records, including the sort key from the Processing Options.	1.8.4	PWSI080	
5	Produce the Standard Selection Statistics Report.	1.8.5	PWSI080	
6	Sort the Selected PHF records using the sort key.	1.8.6	PWSI080	
7	Produce the Public History File Selection Report.	1.8.7	PWSI080	

MODEL STATE INFORMATION SYSTEM

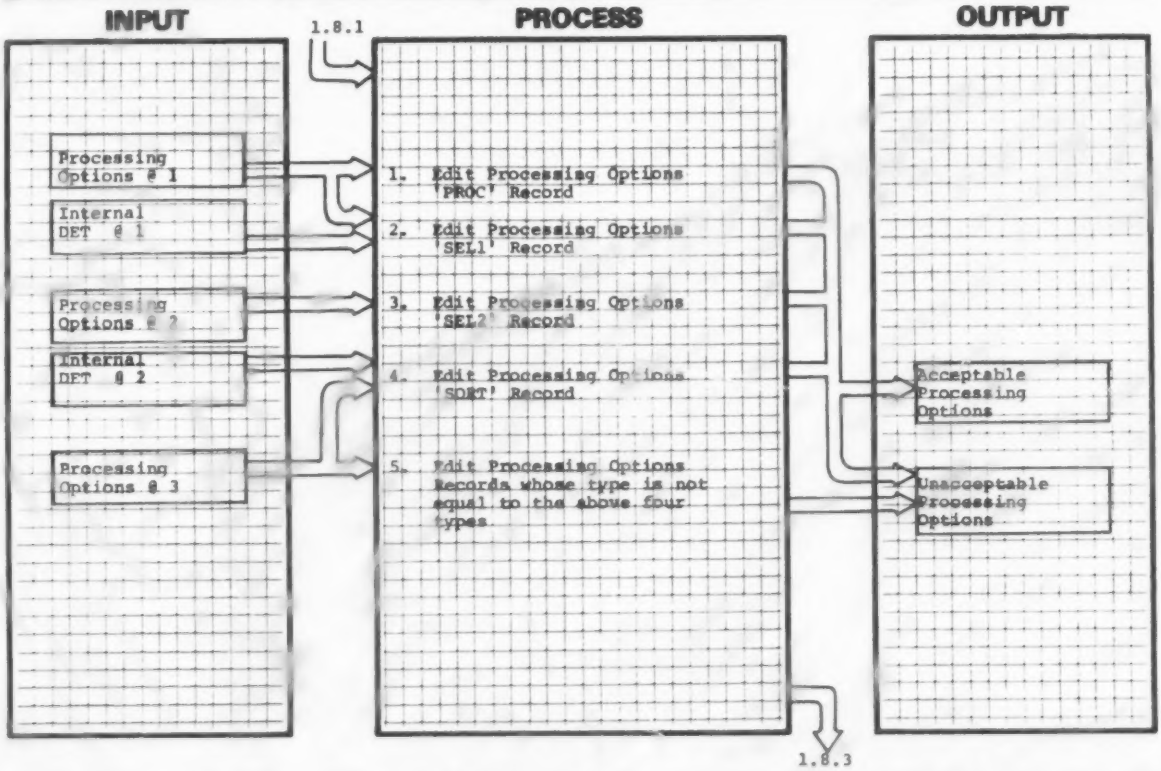
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 12-14-76 **Page:** 1 of 1
Diagram No.: 1.8.1 **Description:** Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of PH. Only the catalogue number, file start position, data element length, data element input length and data element mnemonic are used.		FWSI080	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 12-14-76 **Page:** 1 of 1
Diagram No.: 1.8.2 **Description:** Edit Processing Options

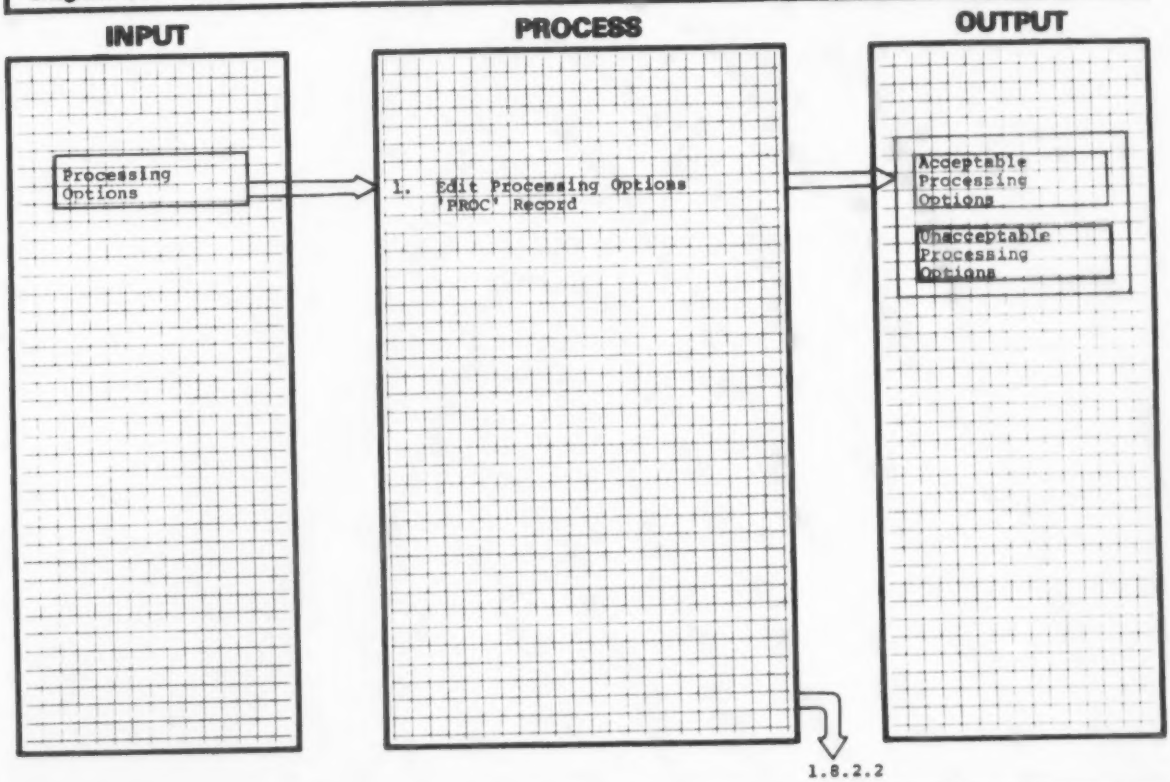

INPUT
1.8.1
PROCESS
OUTPUT
Processing Options # 1
Internal DET # 1
Processing Options # 2
Internal DET # 2
Processing Options # 3
1. Edit Processing Options 'PROC' Record
2. Edit Processing Options 'SEL1' Record
3. Edit Processing Options 'SEL2' Record
4. Edit Processing Options 'SORT' Record
5. Edit Processing Options Records whose type is not equal to the above four types.
Acceptable Processing Options
Unacceptable Processing Options
1.8.3

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options which have 'PROC' in the first four positions in the record.	1.8.2.1	PWSI080	
2	Edit the Processing Options which have 'SEL1' in the first four positions in the record.	1.8.2.2	PWSI080	
3	Edit the Processing Options which have 'SEL2' in the first four positions in the record.	1.8.2.3	PWSI080	
4	Edit the Processing Options which have 'SORT' in the first four positions in the record.	1.8.2.4	PWSI080	
5	If the Processing Options record is not one of the above types, then it is an invalid record and should be shown on the Standard Selection Statistics Report as being in error. NOTE: If any of the Processing Options besides date are in error, then processing is terminated.	1.8.2.5	PWSI080	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv Date: 12-14-76 Page: 1 of 1

Diagram No.: 1.8.2.1 Description: Edit Processing Options 'PROC' Record

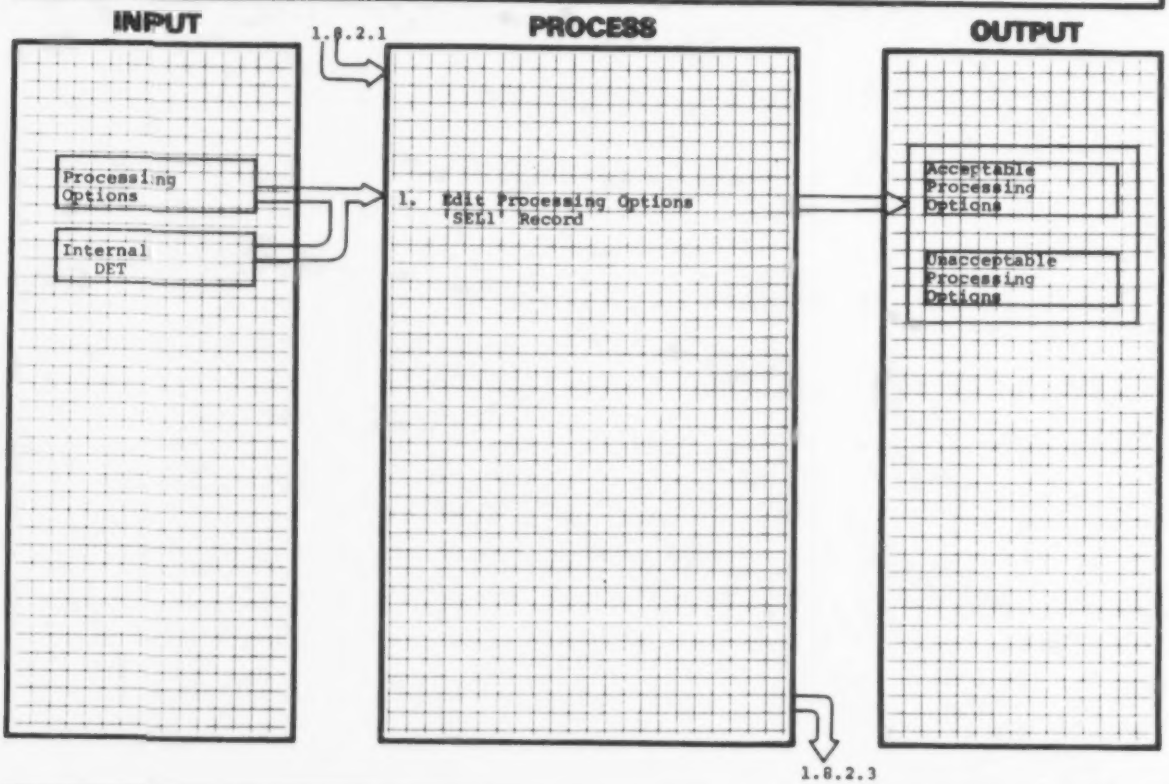


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the 'PROC' Processing Options record for valid current date. The date is used in producing the Public History File Selection Report and the Standard Selection Statistics Report. If an error exists, it should be written on the Standard Selection Statistics Report. The error types are: a. No 'PROC' record exists b. The date is invalid c. There is more than one 'PROC' record. In this case the second 'PROC' record is in error. If an error exists, do not print a date on the two reports.		PWSI080	240 311 MSIS. 306

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 12-14-76 **Page:** 1 of 1

Diagram No.: 1.8.2.2 **Description:** Edit Processing Options "SEL1" Record

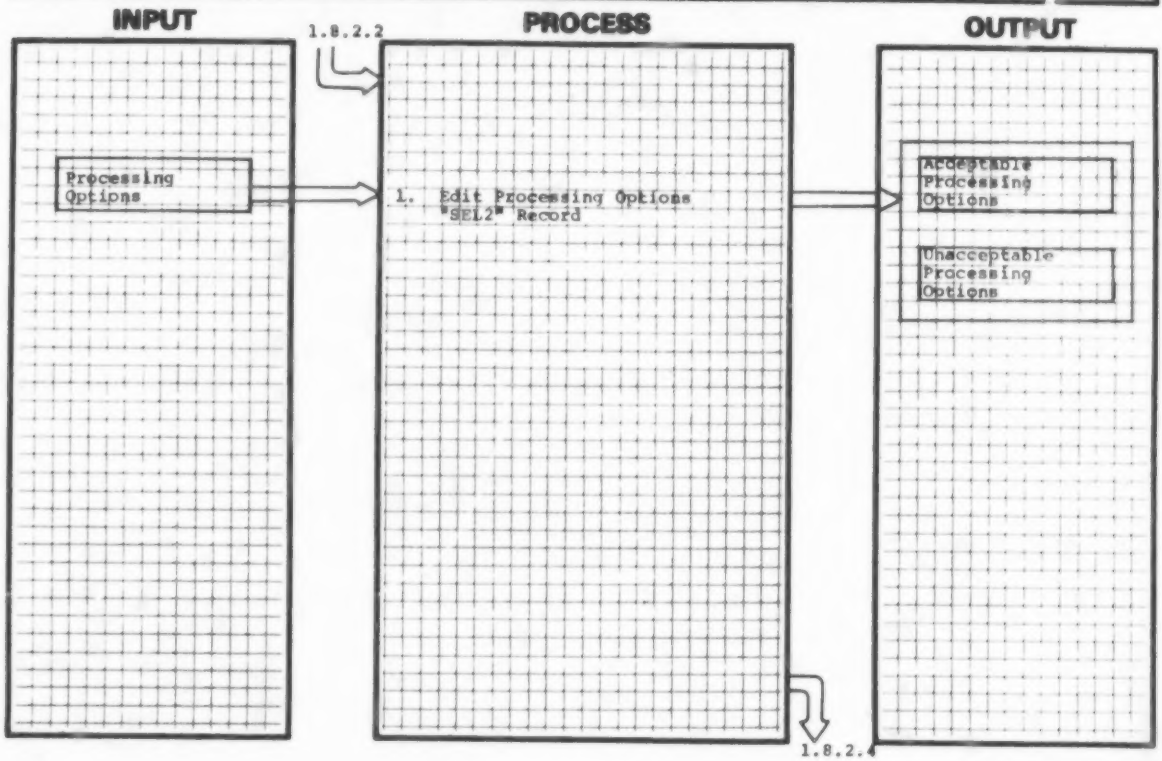


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with "SEL1" in positions 1-4 of the records as follows: a. PHFI-SELECT-1-MNEMONIC, positions 5-14, must equal one of the mnemonic names on the record layout for the PHF. This edit is hard coded into the program. b. PHFI-SELECT-1-DE-VALUE, positions 15-29, must have blanks in positions (DET-INPUT-LENGTH plus 15) to 29 where DET-INPUT-LENGTH is the length of a data element associated with the mnemonic name matched in 1.a. above. Positions 15 to (DET-INPUT-LENGTH plus 14) must be either numeric or alphanumeric as specified by the Data Element Dictionary (DED) for that particular data element. Additionally, if the data element is a date, it is checked for validity and then converted to Julian for comparison purposes. c. PHFI-SELECT-1-DE-NO, positions 30-31, must be a number from 01 to 35 and must be a different number from all other "SEL1" records. If there are no "SEL1" records or if an error exists on any "SEL1" record, then the record is in error and will be written on the Standard Selection Statistics Report. Appropriate error messages for the "SEL1" Processing Options record may be found by referencing the Error Code Instructions. If any errors exist, processing will be terminated.		PWSI080	107 202 207 210 MSIS. 306 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 12-14-76 **Page:** 1 **of** 1

Diagram No.: 1.8.2.3 **Description:** Edit Processing Options "SEL2" Record

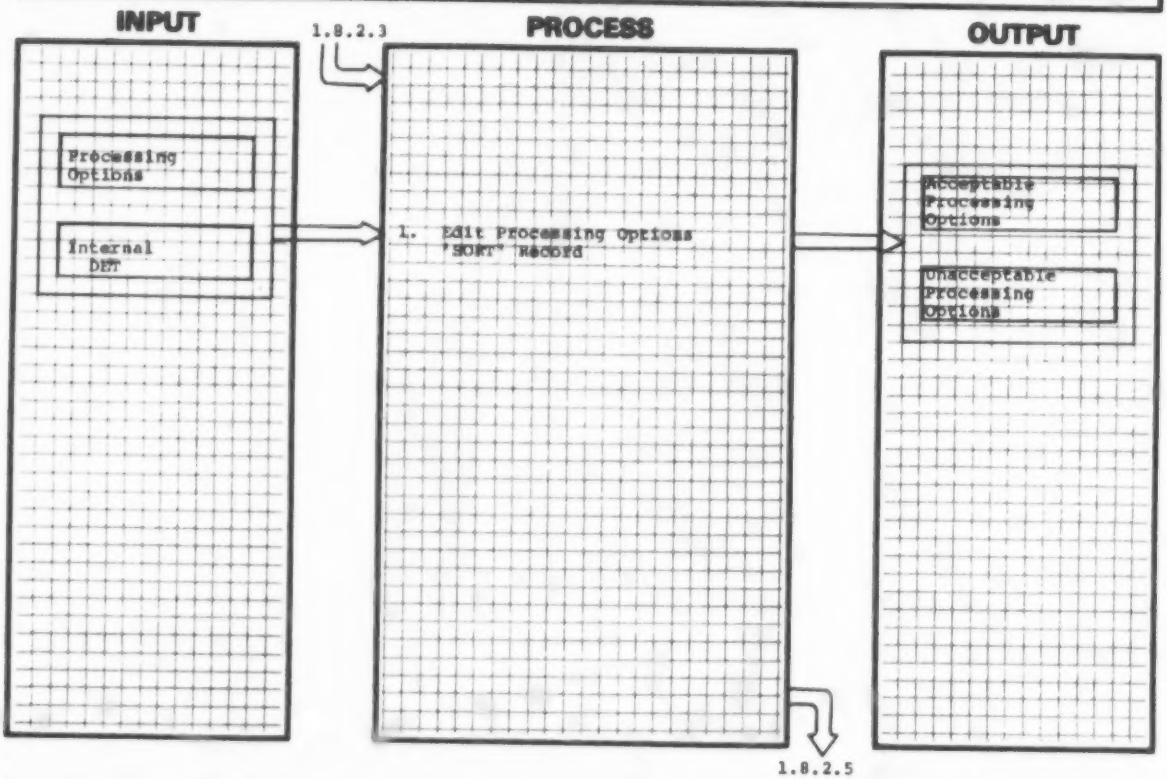


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) with 'SEL2' in positions 1-4 of the record as follows: a. Each non-blank PHPI-SELECT-2-SYMBOL must have a corresponding "SEL1" record, determined by PHPI-SELECT-1-DE-NO being equal to the array position of the PHPI-SELECT-2-SYMBOL being edited. In addition, the PHPI-SELECT-2-SYMBOL must equal one of the following operational symbols: LT = less than EQ = equal to GT = greater than NL = not less than NG = not greater than NX = does not exist blank NOTE: If there are more than 35 "SEL2" records, if no "SEL2" record exists, or if an error exists on a "SEL2" record, then the record is in error and will be written on the Standard Selection Statistics Report. If any errors exist, processing will be terminated.		PWSI080	108 207 210 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 12-14-76 Page: 1 of 1

Diagram No.: 1.8.2.4 Description: Edit Processing Options 'SORT' Record

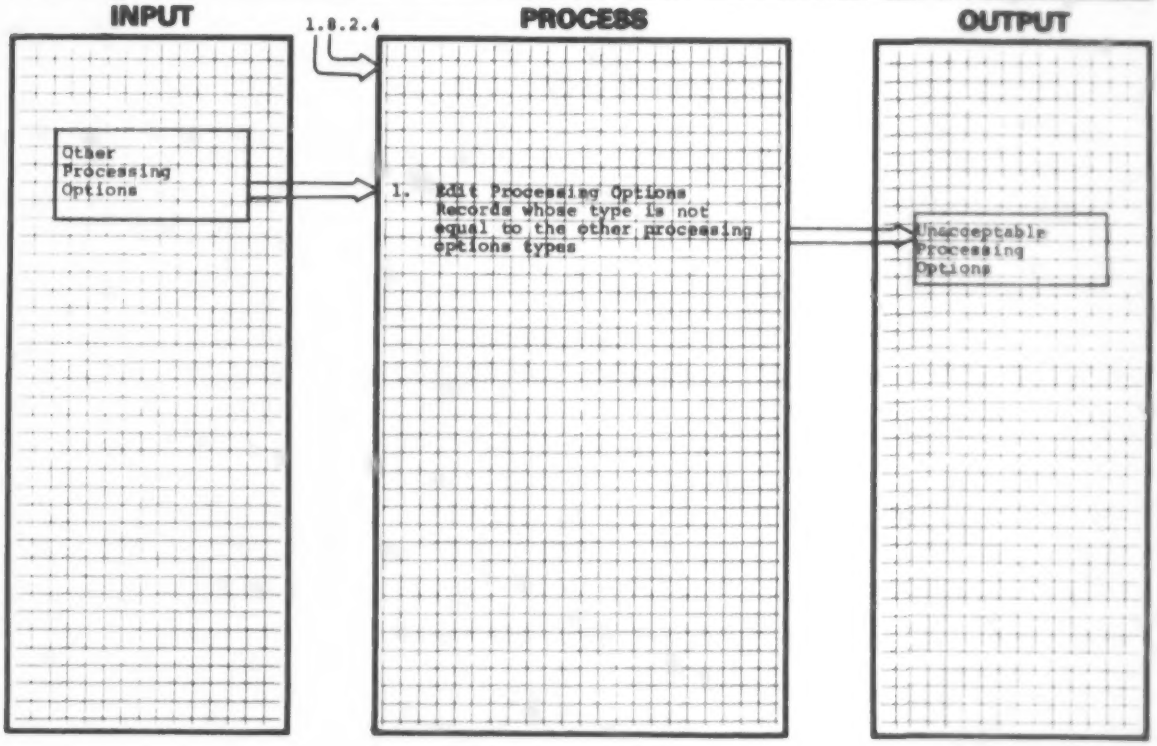


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options with 'SORT' in positions 1-4 of the record as follows: a. PHFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the PHFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, PHFI-SORT-MNEMONIC and PHFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. PHFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the PHFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If PHFI-SORT-SEQUENCE is non-blank, then PHFI-SORT-MNEMONIC must be present. c. PHFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If PHFI-SORT-SEQUENCE is non-blank, then PHFI-SORT-MODE must be present. As each PHFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Selection Statistics Report and processing will be terminated.		PWSI080	100 239 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 12-14-76 **Page:** 1 **of** 1

Diagram No.: 1.8.2.5 **Description:** Edit Other Processing Options

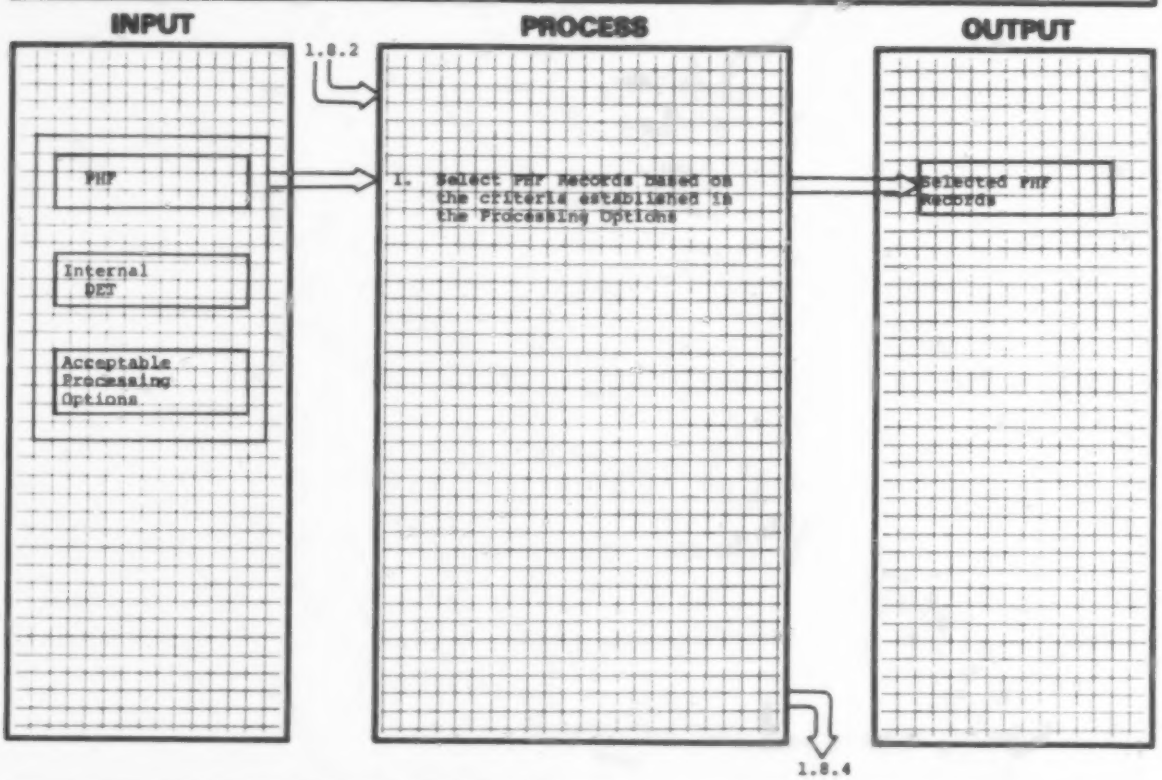


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Any Processing Options records which fall into this category are in error and should be written to the Standard Selection Statistics Report, flagged as being in error, and processing is terminated.		PWSI080	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 12-14-76 Page: 1 of 1

Diagram No.: 1.8.3 Description: Select PHF Records

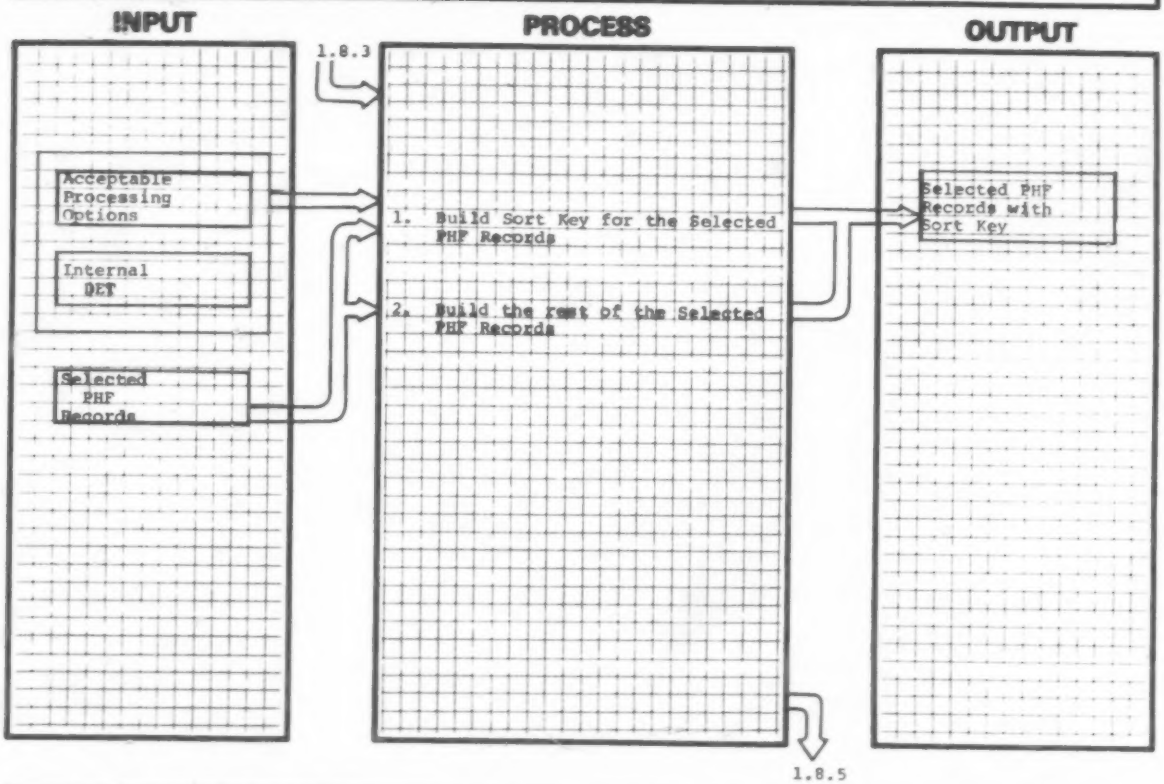


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Read a Public History File (PHF) record. For each mnemonic name, PHFI-SELECT-1-MNEMONIC specified on the "SEL1" records, obtain the corresponding data element value from the PHF record. If the PHFI-SEL-1-MNEMONIC represents a value with a length greater than 15, only obtain the first fifteen positions of the value. Using those values obtained from the PHF record, examine the logic established in each "SEL2" record to determine if the PHF record should be selected. If the Nth XXX-SELECT-1-DE-VALUE from the 35 position array of a "SEL2" record is non-blank, then compare the appropriate value from a "SEL1" record (PHFI-SELECT-1-DE-VALUE, where PHFI-SELECT-1-DE-NO = N) with the corresponding value (same mnemonic name) obtained from the PHF record. The comparison between these two values is made according to the Nth operational symbol (see HIPO 1.8.2.4). If the PHF record meets all the above comparison criteria, then the PHF record is selected. Each PHF record is processed using all "SEL2" records so that the selection counts are properly maintained.		PWSI080	202 207 210

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 12-14-76 Page: 1 of 2

Diagram No.: 1.8.4 Description: Build Selected PHF Records

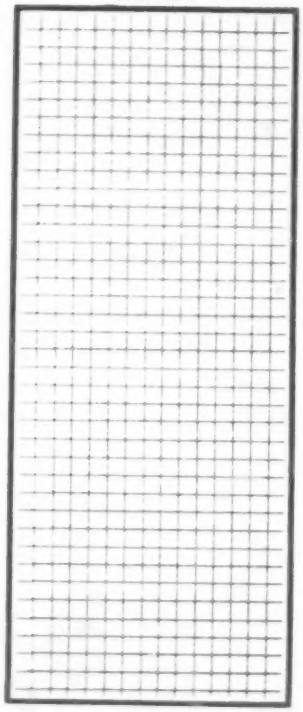


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Selected Public History (PHF) File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Selected PHF File record as an array of one character values. b. Match the PHFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Selected PHF. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Selected PHF. c. In order to obtain a value to be used in building the sort key, the following is done: (1) Use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key.		PWSI080	202 100 239

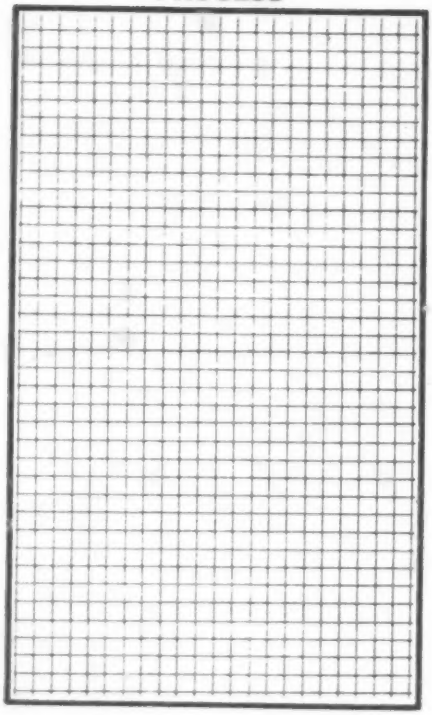
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 12-14-76 Page: 2 of 2
Diagram No.: 1.8.4 Description: Build Selected PHF Records

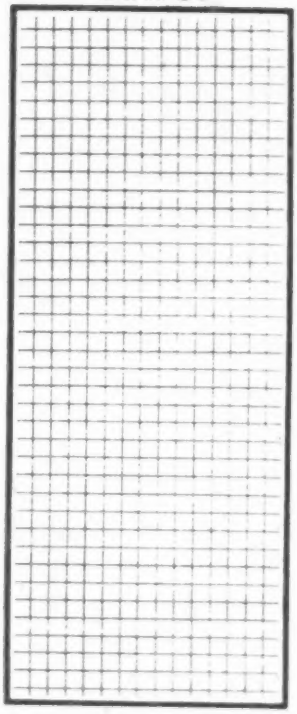
INPUT



PROCESS



OUTPUT

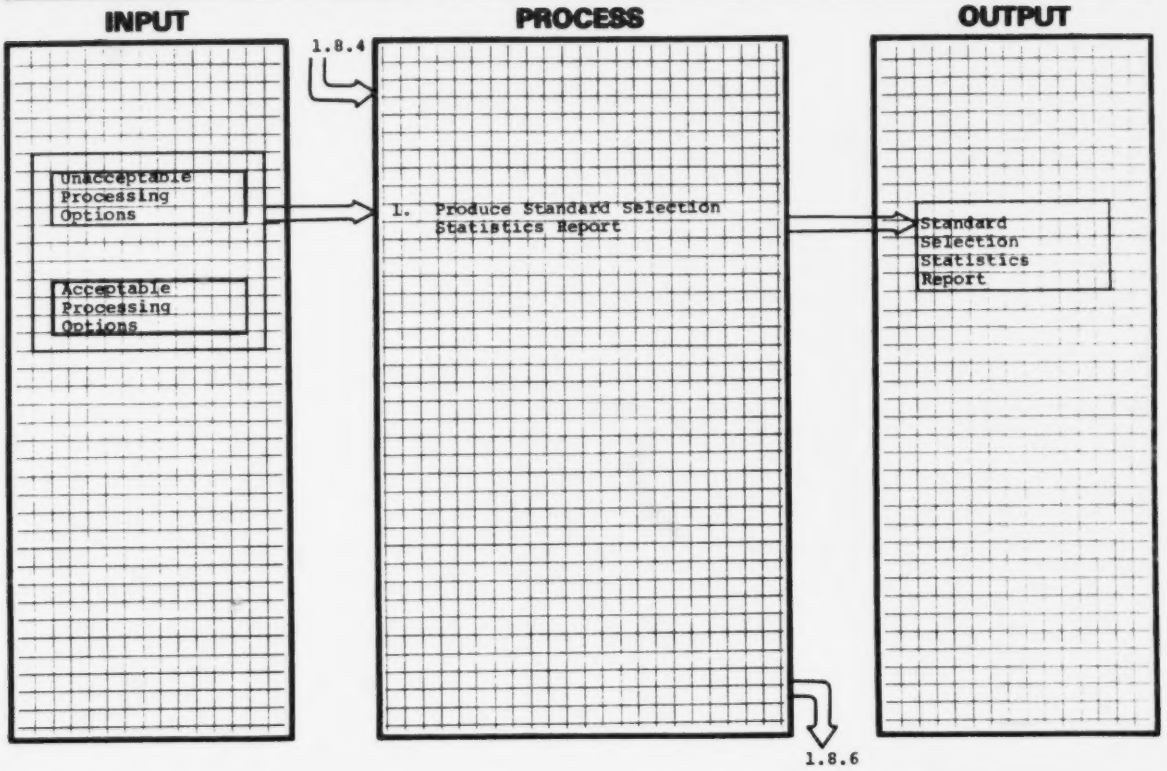


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	d. If the PHFI-SORT-MODE = "A" (ascending) move the value obtained in c. to the proper location in the sort key. If the PHFI-SORT-MODE = "D" (descending) redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the PHFI-SORT-SEQUENCE. NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 position			
2	Move the entire selected PHF record as is into the rest of the selection record.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 12-14-76 **Page:** 1 **of** 1

Diagram No.: 1.8.5 **Description:** Produce the Standard Selection Statistics Report

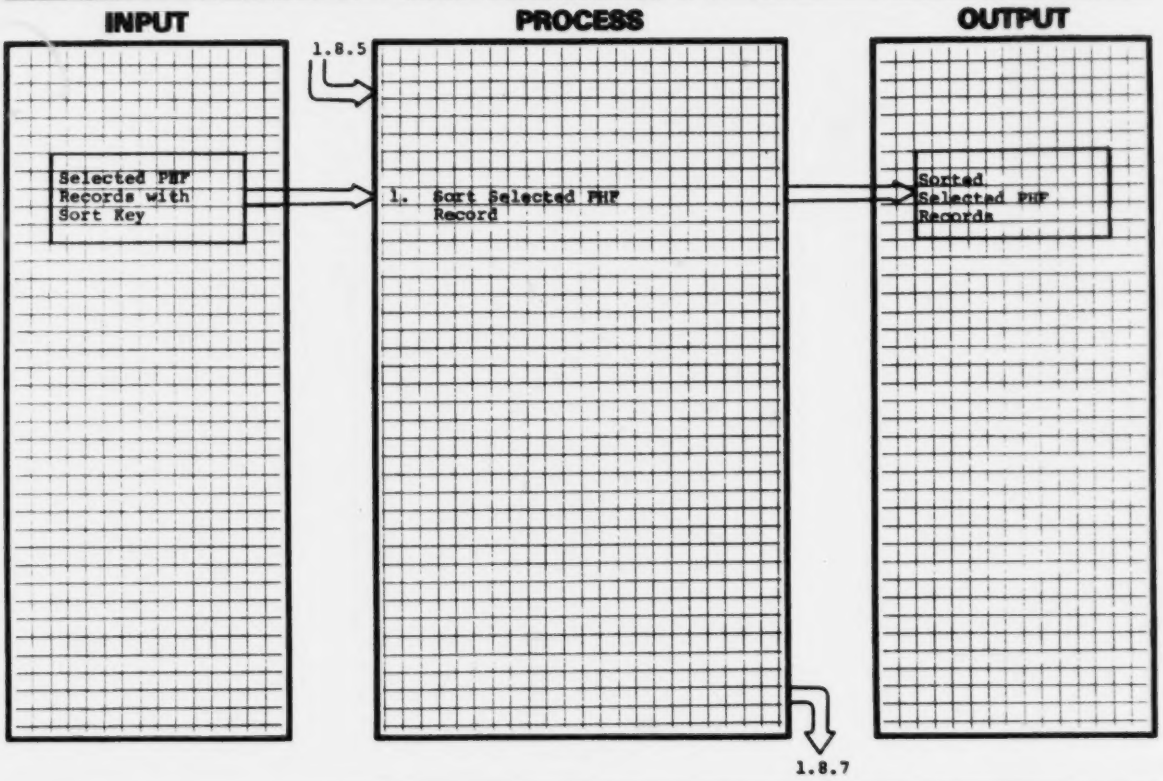


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Selection Statistics Report is always produced. The following two formats may be used: a. The Standard Selection Statistics Report contains: (1) the sort sequence mnemonics (2) the sort mode (3) the selection criteria (4) the total records selected under each selection criteria (5) the total of all records selected for the report (6) the percent of the file selected. b. If any Processing Options records are in error, the records and associated error messages are produced instead of, or in addition, to the information in a.		PWSI080	207 210 240 239 MSIS. 306

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 12-14-76 **Page:** 1 of 1

Diagram No.: 1.8.6 **Description:** Sort Selected PHF Records

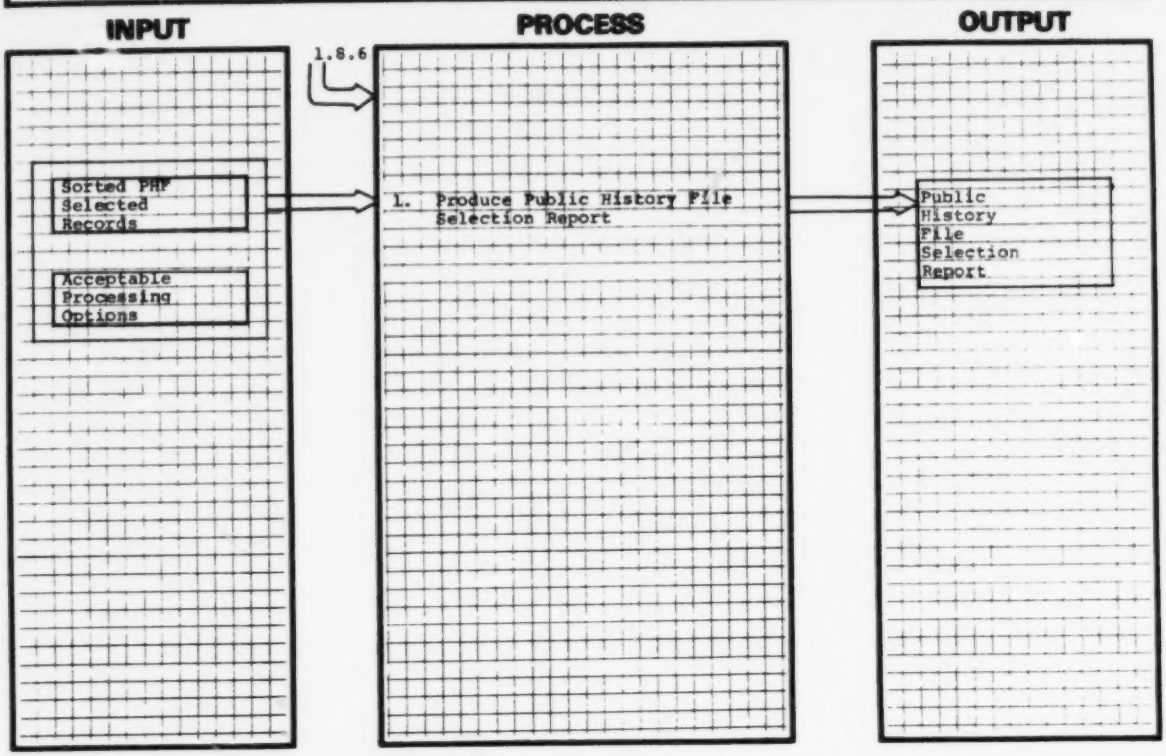


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Selected Public History File (PHF) in ascending sequence according to the thirty position sort key.		PWSI080	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 12-14-76 **Page:** 1 of 1

Diagram No.: 1.8.7 **Description:** Produce Public History File Selection Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Public History File Selection Report from the Sorted Selected Public History File (PHF). The current date for the report is used from the 'PROC' acceptable Processing Options record. If the date is an unacceptable Processing Option, then replace the date with blanks. If there are no selected PHF records, then produce this report with zero totals.		PWSI080	311 240

NARRATIVE

SUBSYSTEM: Public Water System Inventory Subsystem
PROGRAM NAME: PWSI090
DATE: 10/27/76

I. OBJECTIVES:

The objective of this program is to purge records from the Public Water System Inventory Subsystem's Public History File (PHF) that have the current update date on the PHF less than the Processing Options purge date.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public History File	PHF-RECORD	PWSI.202

B. Processing Option Record(s):

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options	PHFI-PROC-RECORD	PWSI.103	PWSI.209

III. OUTPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public History File	PHF-RECORD	PWSI.202
2.	Purged Public History File	PHF-RECORD	PWSI.202

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Public History File Purge Report	PWSI.306
2.	Public History File Purge Statistics Report	PWSI.312 MSIS.309

C. Turnaround Documents:

1. Not Applicable

IV. FUNCTION:

1. The Processing Options are edited. This includes the date which determines which records are to be purged, a current date, and a print select that determines whether a detail report of all purged Public History File (PHF) records is produced. If either of the dates are invalid, then an appropriate error message will be produced and processing will be terminated.

2. The PHF records are purged if the current update date on the PHF is less than the Processing Options purge date. Two (2) output files are built:

   a. The Purged PHF records, and
   b. The remaining PHF records.

3. The PHF Purge Report is produced, if specified by the Processing Options. The PHF Purge Statistics Report is produced unless the error occurred in the Processing Options.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions

1. Processing Options

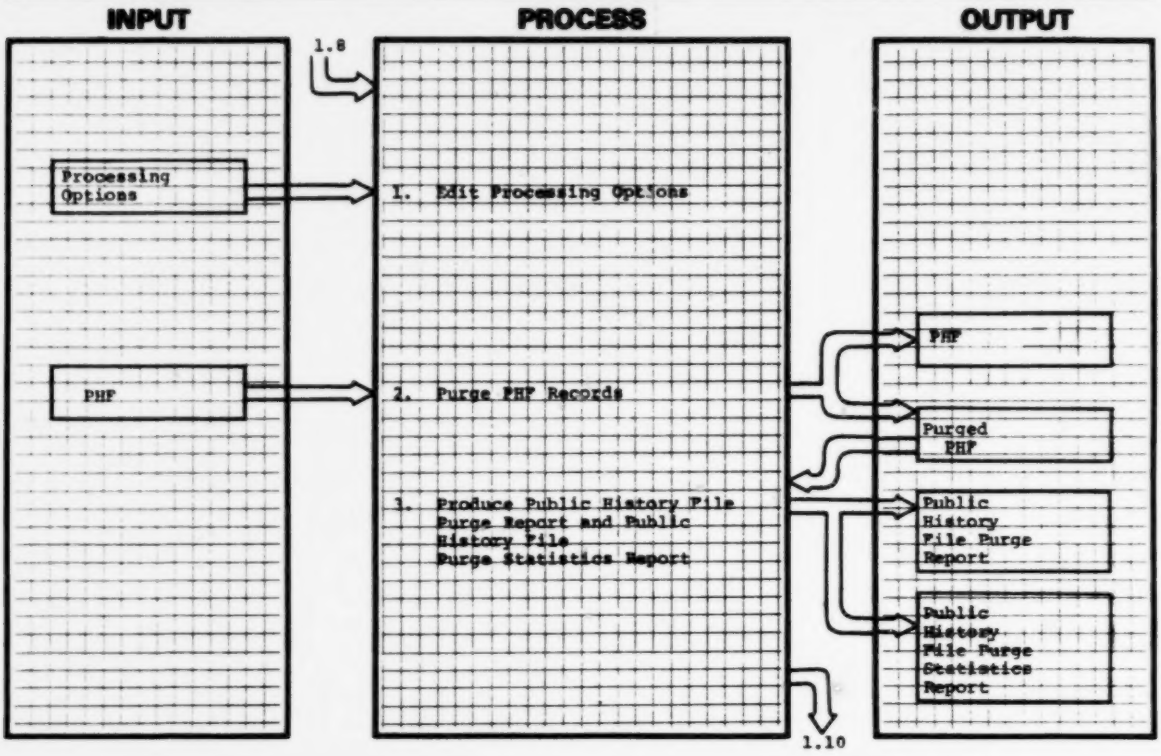
B. Data Element Descriptions

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Public Water System Inv. Date: 11-18-76 Page: 1 of 1

Diagram No.: 1.9 Description: PHF Purge

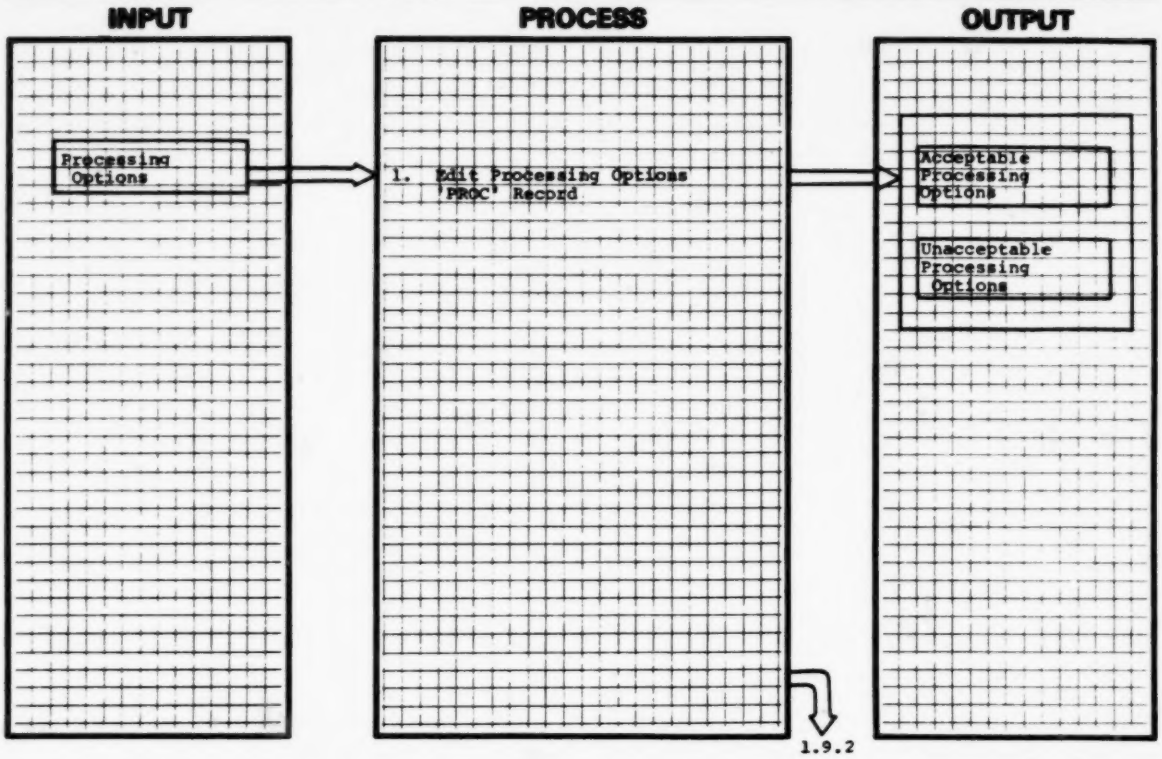


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options record is edited for valid current and purge dates along with valid report options requested.	1.9.1	PWSI090	
2	The Public History File (PHF) records that have a PHF-CURRENT-UPDATE-DATE less than the PHFI-PROC-PURGE-DATE are purged from the PHF.	1.9.2	PWSI090	
3	Produce the Public History File Purge Report of purged PHF records. The Public History File Purge Statistics Report is always produced.	1.9.3	PWSI090	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1

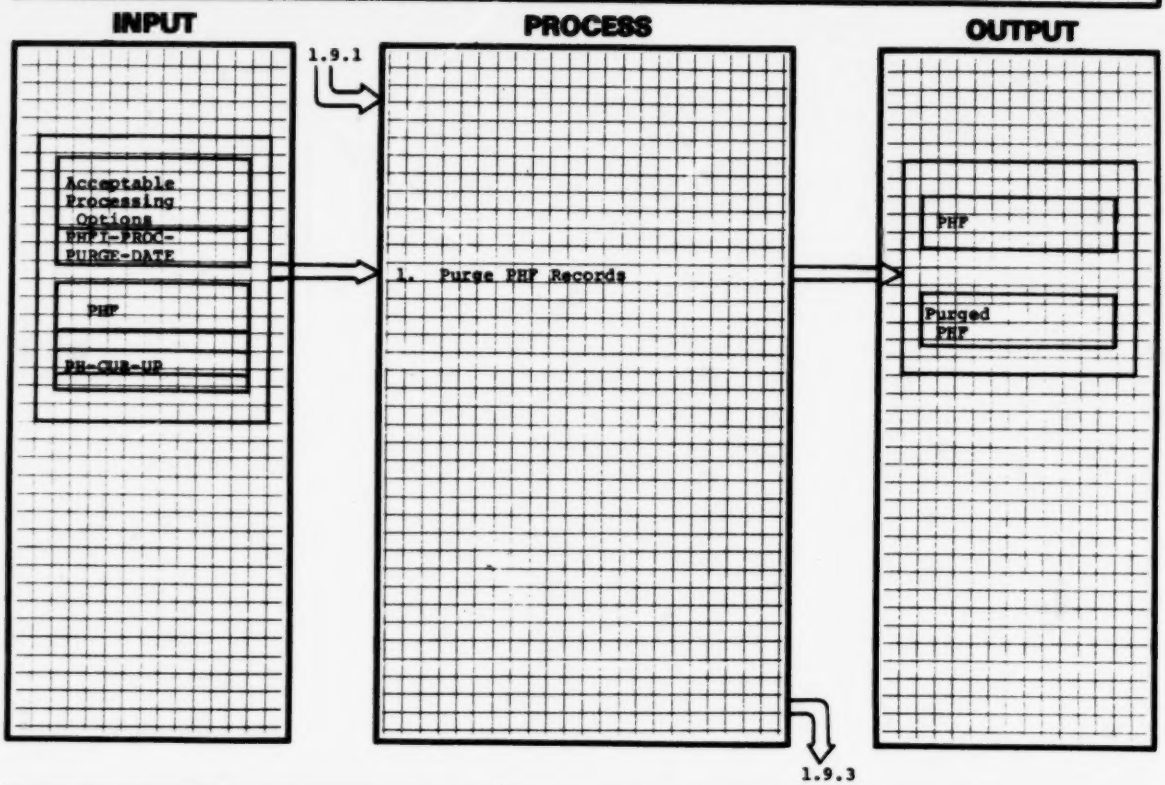
Diagram No.: 1.9.1 **Description:** Edit the Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Processing Options (PROC) include: a. the date used to determine which records are to be purged (purge all records with PHP-CURRENT-UPDATE-DATE less than the 'PROC' purge date). b. current date. c. report option which determines whether a detail report of all purged Public History File (PHF) records is produced. Both dates are edited to verify that they are valid. If the report option is invalid (unacceptable) then the default is not to produce the report. If there are any errors, then the Processing Options record along with appropriate error messages are produced on the Purge Statistics Report. If the report option is not Y or N, produce on appropriate error message and terminate the job.		PWSI090	103 209

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1
Diagram No.: 1.9.2 **Description:** Purge PHF Records

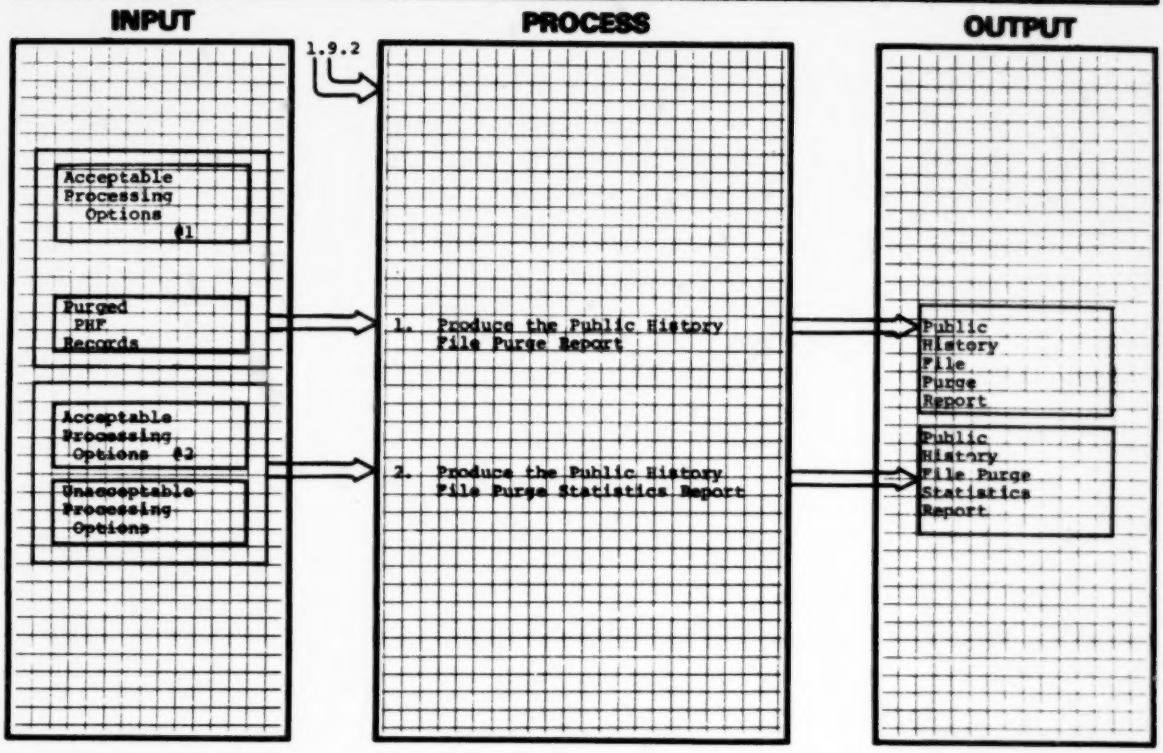


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Public History File (PHF) records are read and purged according to the PHFI-PROC-PURGE-DATE. If the PHF-CURRENT-UPDATE-DATE is less than the PHFI-PROC-PURGE-DATE, then the record is purged from the PHF. Two output files are created: a. Purged PHF Records b. PHF NOTE: PHFI-PROC-PURGE-DATE must be converted to Julian format before comparing it with PHF-CURRENT-UPDATE-DATE.		PWSI090	202 209

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-18-76 **Page:** 1 of 1

Diagram No.: 1.9.3 **Description:** Produce PHF Purge Report and PUrge Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the Processing Options selects to produce the detail report, produce the report titled Public History File Purge Report. Convert all Julian dates to calendar dates before printing.		PWSI090	306
2	The Public History File Purge Statistics Report is always produced whether or not the Purge of the Public History File Report is produced. NOTE: If the Processing Options dates are invalid (unacceptable), the Standard Error Report is produced instead of the Public History File Purge Statistics Report.			312 MSIS. 309

NARRATIVE

SUBSYSTEM: Public Water System Inventory
PROGRAM NAME: PWSI120
DATE: November 16, 1976

I. OBJECTIVES:

The objective of this program is to aid in converting the National Public Water System Inventory File to the MSIS Public Water System File format and to produce a report containing the converted records.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	National Public Water System Inventory	PWS-CONVERSION-RECORD	PWSI.102	PWSI.203
2.	Code Value Table	CVT-RECORD		MSIS.206

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	PWFI-PROC-RECORD	PWSI.112	PWSI.235

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	PWF Transaction File	PWFI-TRAN-0	PWSI.400	PWSI.213
		PWFI-TRAN-2	PWSI.400	PWSI.215
		PWFI-TRAN-3	PWSI.400	PWSI.216
		PWFI-TRAN-4	PWSI.400	PWSI.217
		PWFI-TRAN-5	PWSI.400	PWSI.218
		PWFI-TRAN-6	PWSI.400	PWSI.219
		PWFI-TRAN-7	PWSI.400	PWSI.220
		PWFI-TRAN-8	PWSI.400	PWSI.221
		PWFI-TRAN-16	PWSI.401	PWSI.229
		PWFI-TRAN-17		PWSI.233

B. Report Layouts:

NAME	EXHIBIT LAYOUT
1. National Public Water System Converted Data	PWSI.305

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Edit the Processing Options 'PROC' record to determine the date for the report and the state being processed. If the date is invalid, no date will appear on the report.

2. An internal Code Value Table (CVT) is built in working storage to be used for conversion of the National Public Water Inventory File to PWS Transaction format.

3. The National Public Water System Inventory File is used as input for the conversion process. Most of the national data is a direct transfer with only minor field size changes. The only major conversion is the county plant code. It must be converted from the county name to a two-digit code unique to the state abbreviation county code.

4. The converted data from the National Public Water System Inventory File is printed for each Public Water System. The converted file will be used as the initial transaction data into program PWSI010, that creates the complete new Public Water File (PWF).

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

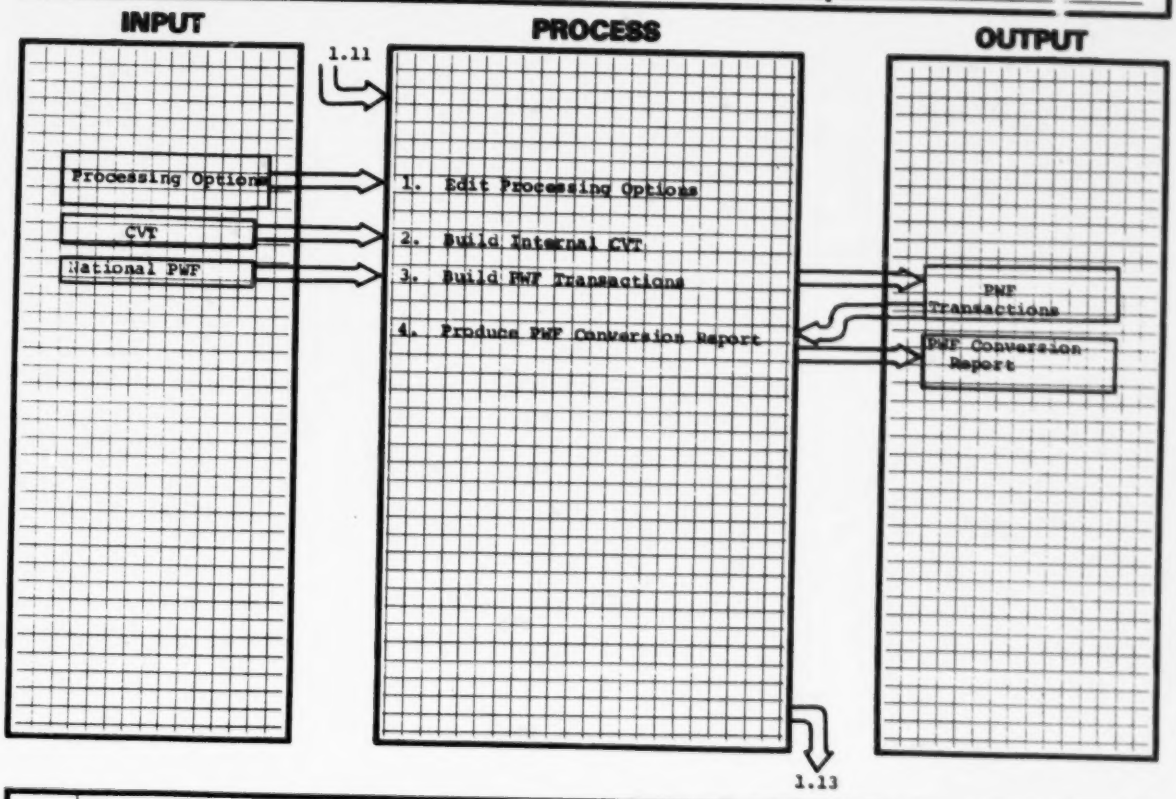
1. Processing Options

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 of 1
Diagram No.: 1.12 **Description:** Convert National Inventory

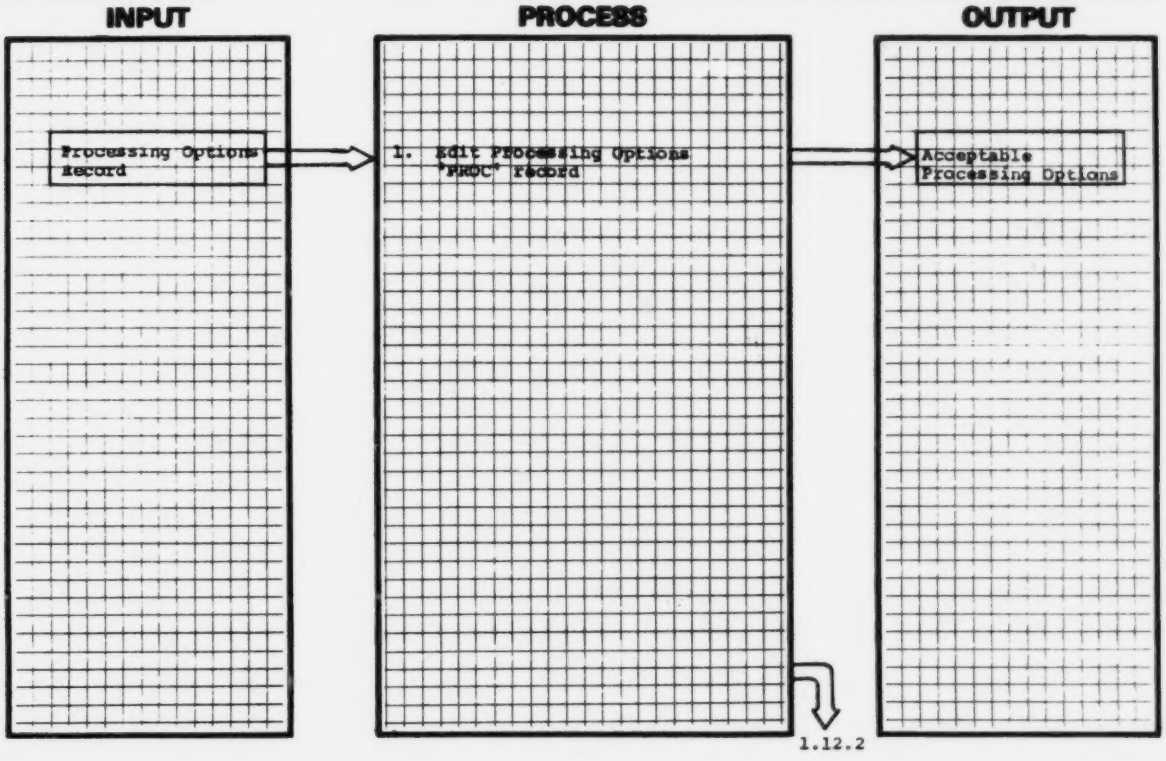


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options 'PROC' record.	1.12.1	PWSI120	
2	Build an Internal Code Value Table (CVT).	1.12.2	PWSI120	
3	Build new Public Water System Inventory File (PWF) transactions using data from the National PWF.	1.12.3	PWSI120	
4	Produce the Public Water File Conversion Report.	1.12.4	PWSI120	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 of 1

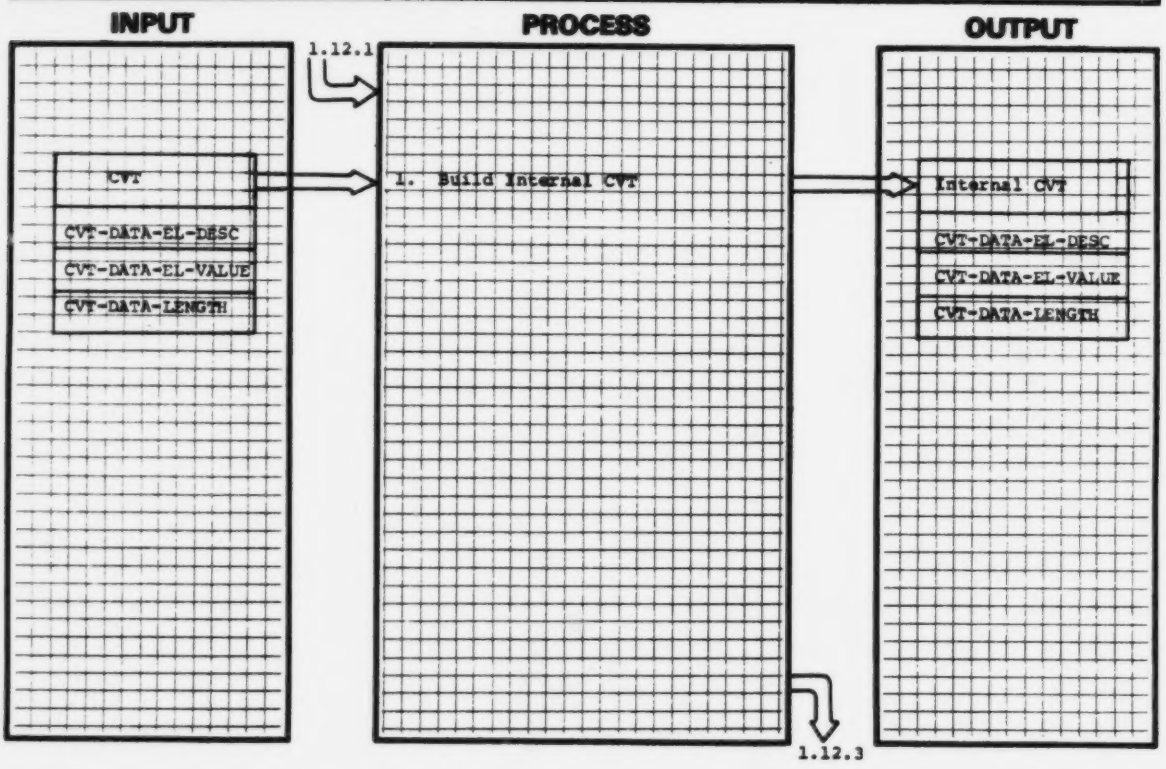
Diagram No.: 1.12.1 **Description:** Edit the Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'PROC' in positions 1-4 of the record as follows: a. Date (montn, day, year) must be a valid date. This date is used in producing the report. b. State code must be a valid alphabetic state code. An error exists if: a. No 'PROC' record exists. b. Tne date is invalid. c. Tnere is more tnan one 'PROC' record. In tnis case, tne second 'PROC' record is in error. d. Tne State code is missing or invalid. If an error exists, tnen do not print a date on the report produced by this module.		PWSI120	112 235

MODEL STATE INFORMATION SYSTEM

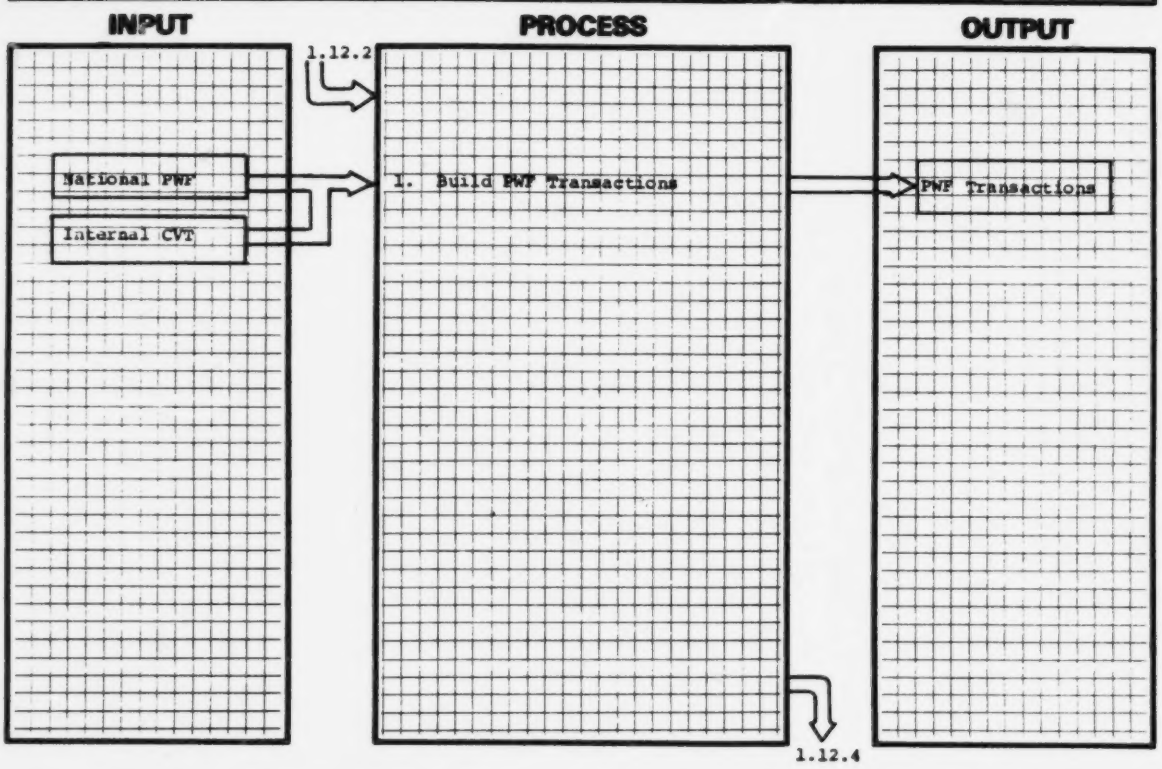
Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 **of** 1
Diagram No.: 1.12.2 **Description:** Build Internal CVT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Code Value Table (CVT) of data element values for county codes. Appropriate records are stored internally to be used in converting county name to the Public Water File (PWF) format. Allow for 260 entries with a catalogue number of 159.	1.12.1	PWSI120	MSIS. 206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 11-16-76 **Page:** 1 of 1
Diagram No.: 1.12.3 **Description:** Build PWF Transactions

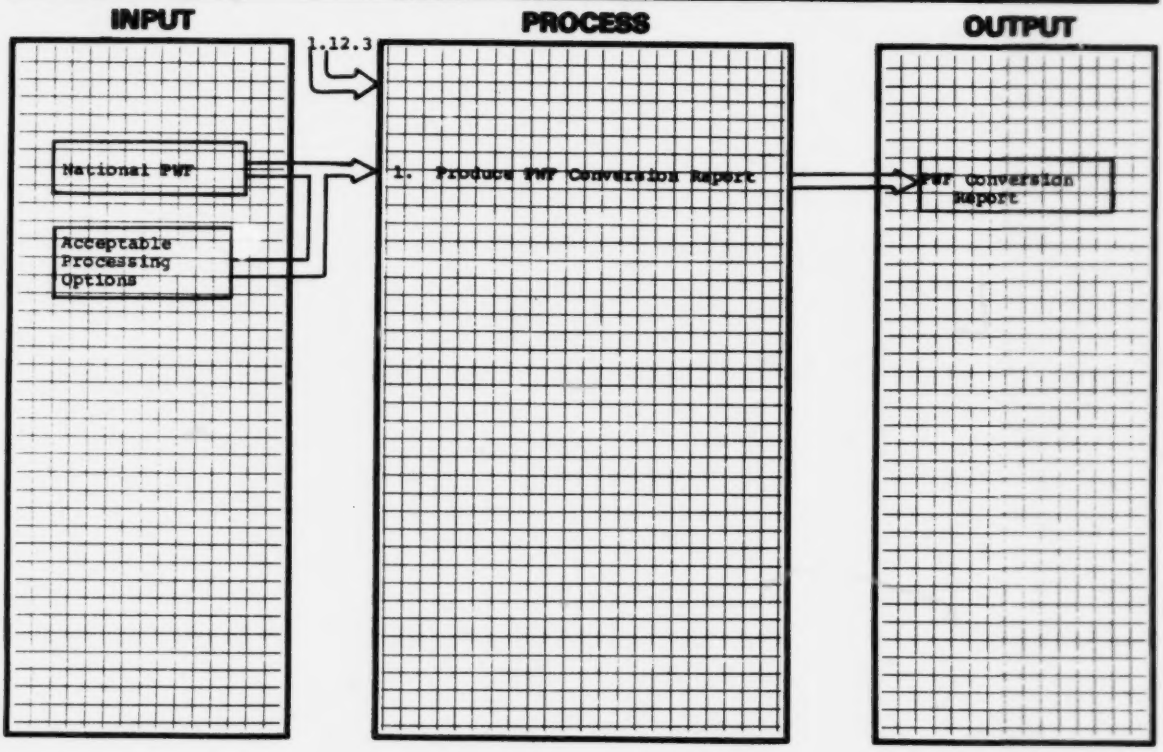


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The National Public Water File data is input for the conversion process. Most of the National data is directly transferred with only minor field size changes. The only major conversion is the PWF-PLANT-COUNTY-CODE. It must be converted from the county name to a three digit code unique to the state abbreviation code. The internal CVT is used to compare and match the value of the data element to be converted to the CVT-DATA-EL-DESC. Then, the CVT-DATA-EL-VALUE is used for county code. Special logic is also necessary to convert PWS-COMM field in the National PWF to the value of PLANT-TYPE in transaction '06'. A compound condition must be met before a plant type can be considered "Community". If PWS-COMM = 1 or PWS-COMT = 1 or PWS-INST = 1 or PWS-MOHD = 1 and if PWS-NMSR is greater than 15 or PWS-RPOD is greater than 25, then PWFI-PLANT-TYPE should be 'C'; otherwise PWFI-PLANT-TYPE = 'N'. Also, if PWS-OWNER is converted as follows: PWS-OWNER → PWFI-OWNER-TYPE 1 → M 2 → I 3 → F 4 → S 5 → X all others → U		PWSI120	203 213 215 216 217 218 219 220 221 229 233

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 11-16-76 Page: 1 of 1

Diagram No.: 1.12.4 Description: Produce PWF Converstion Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The converted data from the National Public Water File is printed for each Public Water System. The converted file will be used as the initial transaction data into program PWSI010, that creates the complete new Public Water File (PWF). If processing was terminated due to errors in the Processing Options, then this report will not be produced and an error report will be produced.		PWSI120	305 204

VISUAL TABLE OF CONTENTS

1 - Public Water System Inventory Subsystem
1.13 - Build Public Water Table (PWT)
1.13.1 - Edit Processing Options
1.13.2 - Build Public Water Table (PWT)
1.13.2.1 - Build Public Water Table (PWT) Header
1.13.2.2 - Build Public Water Table (PWT) Detail
1.13.2.3 - Update Public Water Table (PWT) Header
1.13.3 - Produce Public Water Table (PWT) Statistics Report

Diagram Type: VTOC
Diagram No: 1.13

Subsystem: Public Water System Inventory
Description: Build Public Water Table

NARRATIVE

SUBSYSTEM: Public Water System Inventory
PROGRAM NAME: PWSI130
DATE: 1-25-77

I. OBJECTIVES:

The objective of this program is to build the Public Water Table (PWT).

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public Water File	PWF-RECORD	PWSI.200

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options	PWFI-PROC-RECORD	PWSI.101	PWSI.212

III. OUTPUTS:

A. Record Layout:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public Water Table	PWT-RECORD	PWSI.201
		PWT-HEADER-RECORD	PWSI.234

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Public Water Table Statistics Report	PWSI.314 MSIS.309

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Edit the Processing Options Record for a valid date. An error will cause the date field to be blanks when the Public Water Table Statistics Report is produced.

2. Build the Public Water Table (PWT) Direct Access File. The header record for the PWT is built from information in the program. The detail records for the PWT are built from records on the Public Water File (PWF). The header record is updated with the total number of PWT records, once all the PWT detail records are built.

3. Produce the PWT Statistics Report containing the total number of detail records written to the PWT and the number of records read from the PWF.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

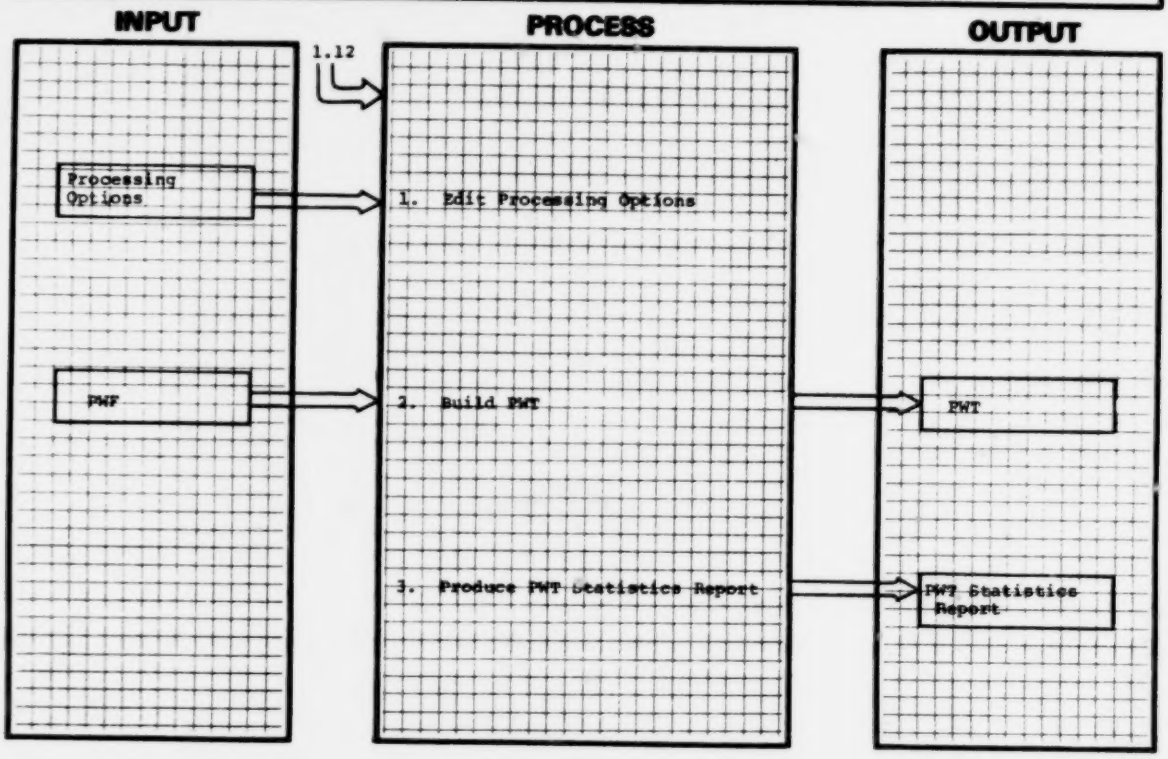
B. Data Element Descriptions:

1. Public Water Table

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Public Water System Inv **Date:** 1-26-77 **Page:** 1 of 1

Diagram No.: 1.13 **Description:** Build Public Water Table (PWT)

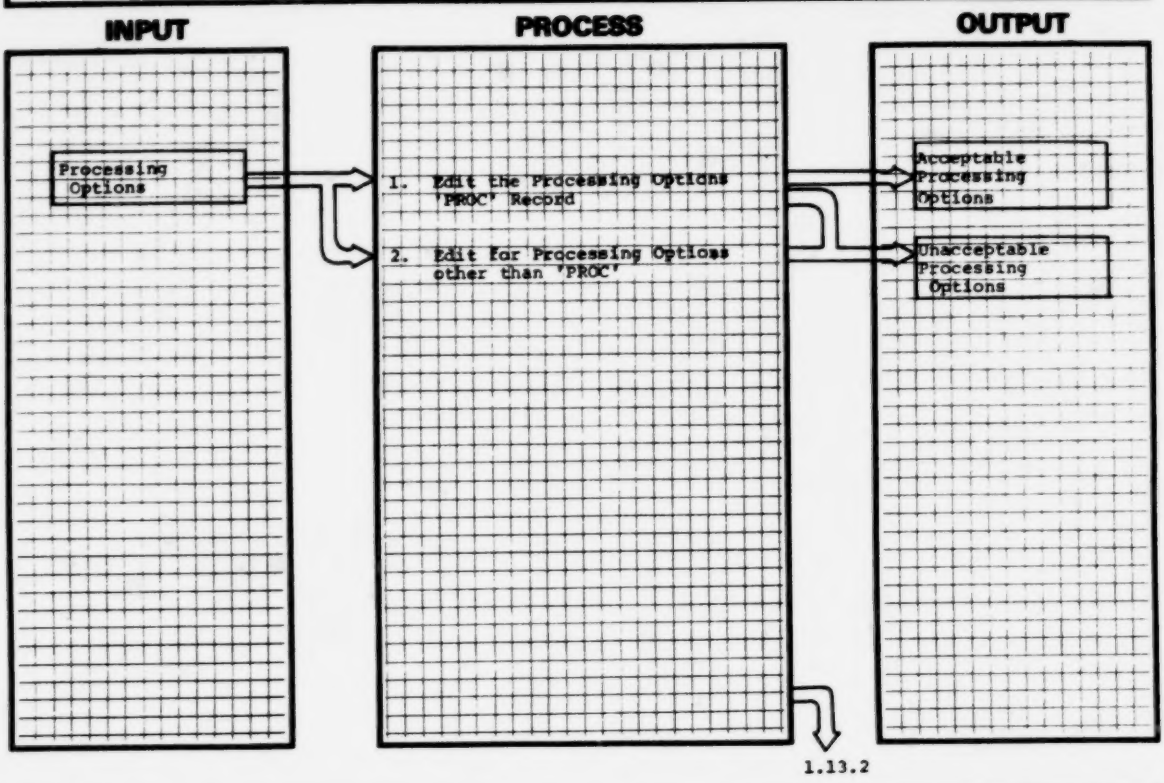


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options Records are edited. If any Processing Options Records are in error, the Public Water Table (PWT) Statistics Report will be produced without a date.	1.13.1	PWSI130	
2	The PWT is built from corresponding records on the Public Water File (PWF). The PWT header record is built from information in the program.	1.13.2	PWSI130	
3	The PWT Statistics Report is produced.	1.13.3	PWSI130	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1-26-77 Page: 1 of 1

Diagram No.: 1.13.1 Description: Edit Processing Options

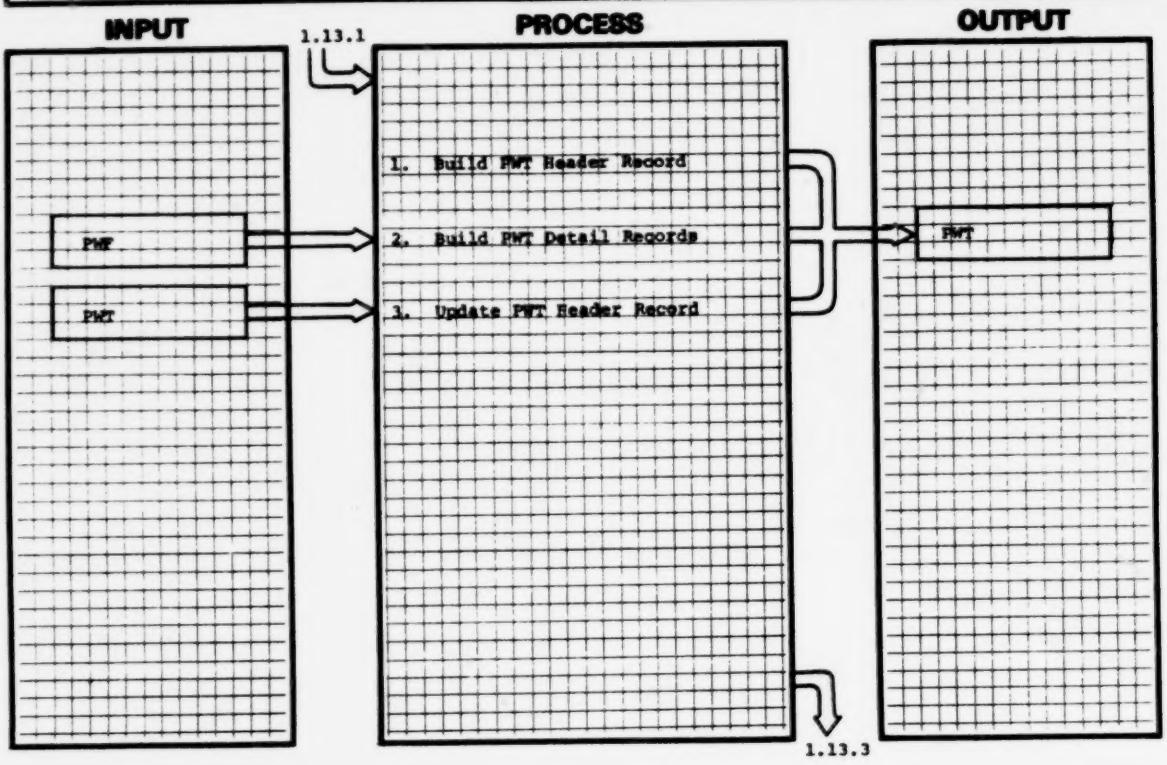


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Option for 'PROC' as follows: a) Date (month, day, year) must be a valid date. This date is used in producing the report. An error exists if: a) No 'PROC' record exists b) The date is invalid, then no date will appear on the report c) There is more than one 'PROC' record. In this case, the second 'PROC' record is in error. If there is an error then the Processing Options record along with an appropriate error message will be written on the Public Water Table (PWT) Statistics Report.		PWSI130	101 212 MSIS. 309
2	Edit the Processing Options which are other than 'PROC'. These records are in error and will be written to the PWT Statistics Report.		PWSI130	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Public Water System Inv. Date: 1-27-77 Page: 1 of 1

Diagram No.: 1.13.2 Description: Build PWT

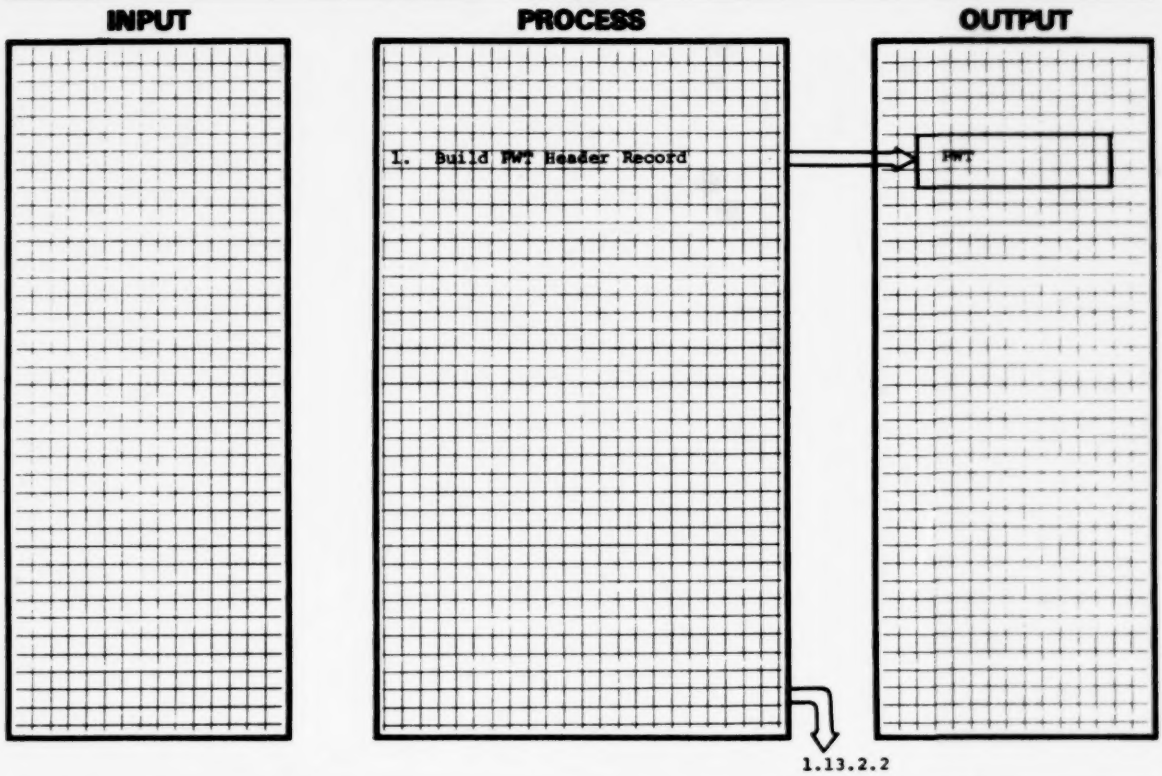


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Public Water Table (PWT) Header Record is built from information hard coded in the program.	1.13.2.1	PWSI130	
2	The PWT detail records are built from corresponding Public Water File (PWF) Records.	1.13.2.2	PWSI130	
3	The PWT Header Record is updated with the number of records on the PWT.	1.13.2.3	PWSI130	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1-27-77 **Page:** 1 **of** 1

Diagram No.: 1.11.2.1 **Description:** Build PWT Header Record

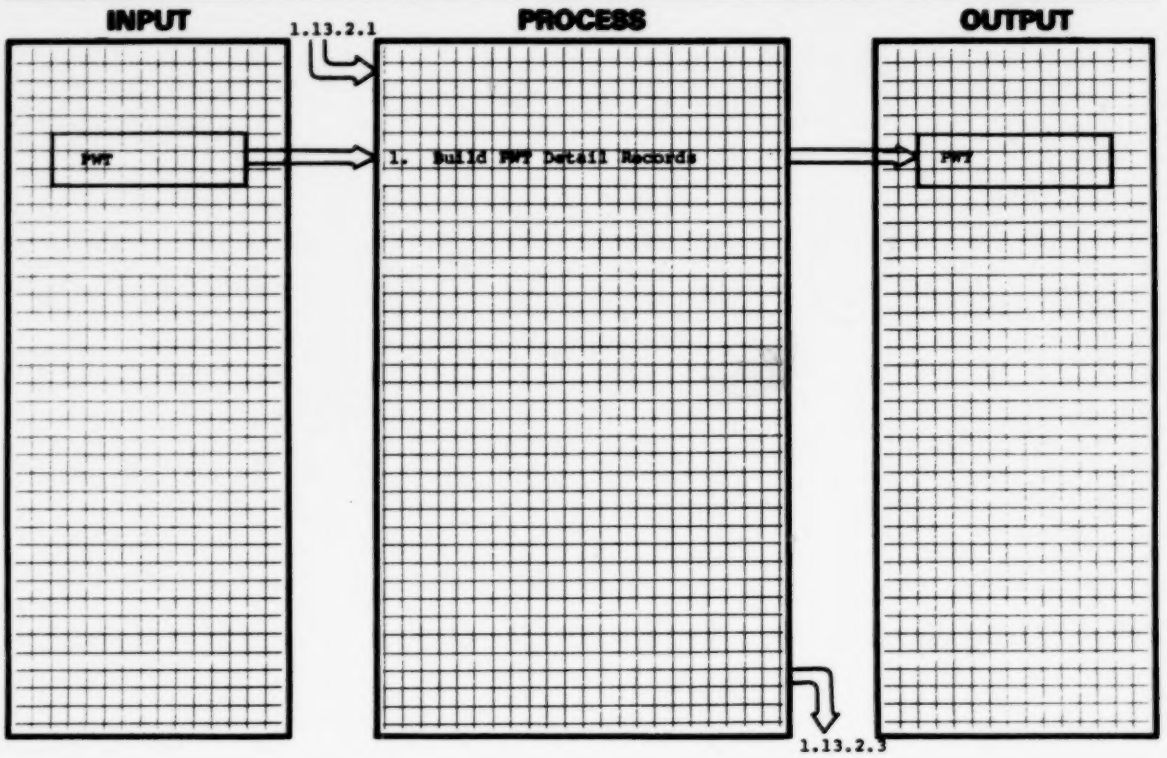


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Public Water Table (PWT) Header Record is built and written to the PWT with information hard coded in the program as follows: a. The PWT-HEADER-NO-OF-RECORDS element is set to zeros. PWT-HEADER-RECS-PER-TRK element is loaded with a value equal to the number of PWT records with keys that will fit on a given track of the disk type that will contain the PWT. b. The actual key field is a level 01 group item with two parts. The first part is a computational field with picture of S9(5) and is set to zeros. The second part of the actual key has a picture of 9(7) and is set to zeros.		PWSI130	234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv. **Date:** 1-27-77 **Page:** 1 of 1

Diagram No.: 1.13.2.2 **Description:** Build PWT Detail Records

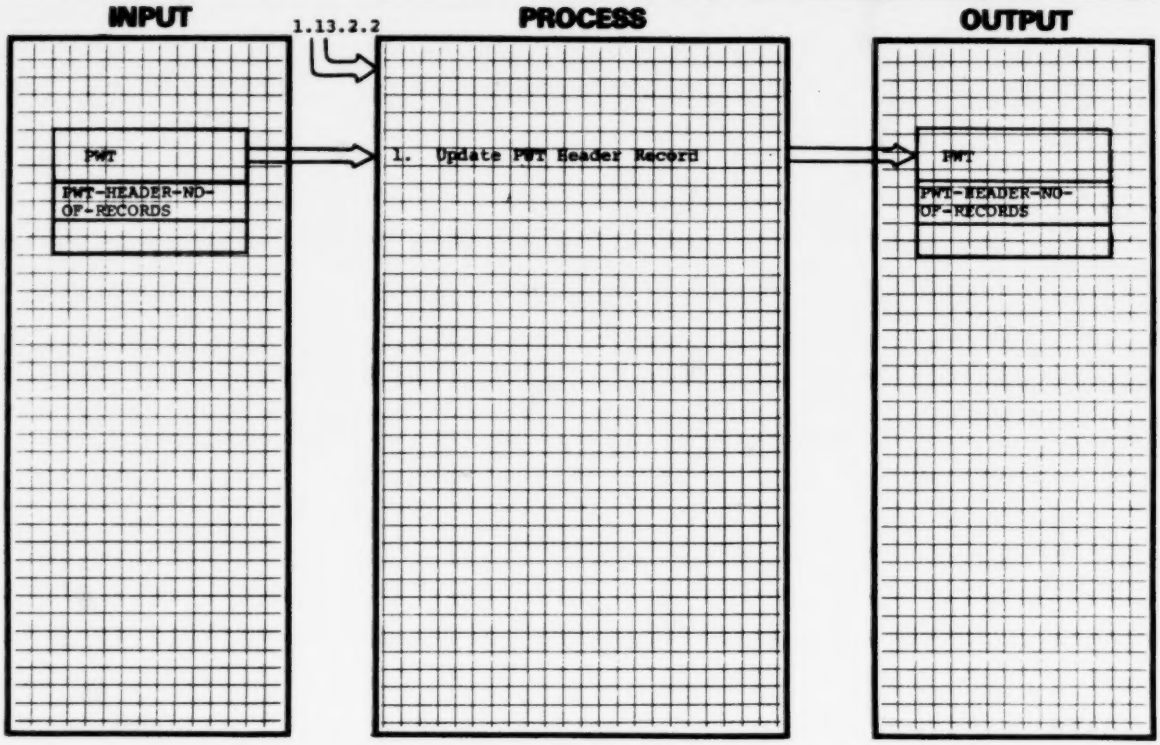


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Public Water Table (PWT) Detail Records are built for each active record* present on the Public Water File (PWF) as follows: a. As each detail record is built, the relative record number is calculated. The first detail record is relative record number 1 because the header record is number 0. The relative record number is used to build the actual key field in the program and the PWT-RELATIVE-REC-NUMBER field on the PWT. b. An accumulator of all PWF records read is kept to be produced on the PWT Statistics Report. The actual key is a group item with a level 01. The actual key has two parts, as follows: 1. The first part is relative track picture S9(5), usage is computational. The value is calculated in the program by dividing the relative record number above by the field, records per track. 2. The second part is relative record number with a picture of 9(7). *NOTE: An active record is indicated by not having an 'I' in PWF-PLANT-ACTIVITY. If any write or read error occurs a message will be written on the PWT Statistics Report indicating an invalid key and processing will be terminated. All data elements for the PWT are obtained directly from the PWF with the exception of PWT-PLANT-SOURCE-CODE which is determined as follows: 1. Search the variable portion of the PWF for all the existing sources. If any source code is equal to 'S' or 'P', then make the PWT-PLANT-SOURCE-CODE 'S'; else, make it equal to 'G'.	1.13.2.2	PWSI130 PWSI130	200 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Public Water System Inv. Date: 1-27-77 Page: 1 of 1

Diagram No.: 1.13.2.3 Description: Update PWT Header Record

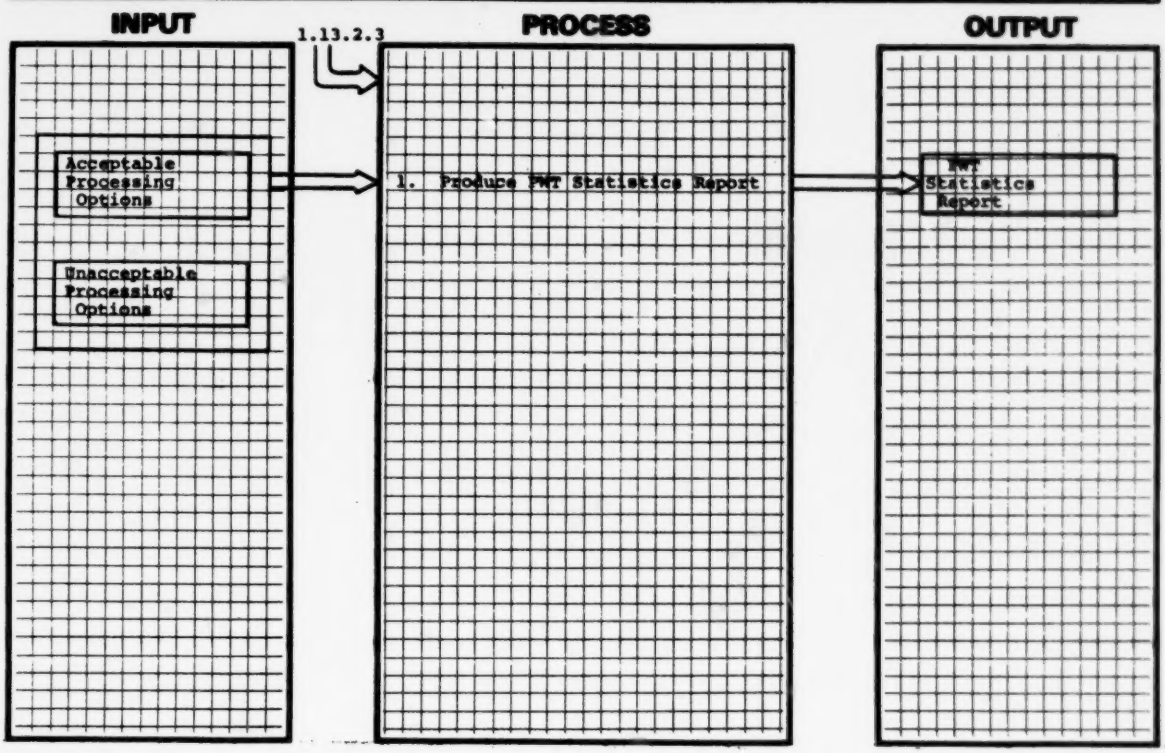


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Header Record is updated as follows: a. The Public Water Table (PWT) is closed, then opened as I-O and the Header record is read using the same actual key as used when initially writing the Header record (See HIPO 1.13.2.1). b. The relative record number of the last detail record is adjusted to be relative to 1 instead of 0. The PWT-HEADER-NO-OF-RECORDS is updated with the relative record number which represents the number of records on the PWT. c. The Header record is written to the PWT with the same actual key as read above.	1.13.2.1	PWSI130	234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Public Water System Inv **Date:** 1-27-77 **Page:** 1 **of** 1

Diagram No.: 1.13.3 **Description:** Produce Public Water Table Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Public Water Table (PWT) Statistics Report is produced, as follows: a. If any Processing Options errors were encountered, the Processing Options record, along with an appropriate error message, is produced. b. Otherwise the total number of records written to the PWT and the total number of records read from the Public Water File (PWF) are produced.		PWSI130	MSIS. 309 314

Regulations Subsystem (REGS)

1. General Description

The Regulations Subsystem (REGS) is a mandatory subsystem whose purpose is to create the Regulations File (RGF). The RGF is a file of records containing the Federal and/or State regulations for contaminants monitored in drinking water. The RGF serves as a basis for determining whether water samples taken from a PWS distribution system are in compliance with chemical, radiological, bacteriological or turbidity State or Federal Regulations. Each record on the RGF pertains specifically to information necessary to define a State or Federal Regulation for one contaminant. In addition, Federal and State Regulation tables such as the fluoride temperature dependent maximum contaminant levels are included in the RGF.

Drinking water quality is determined by comparing the results of laboratory analysis with the requirements of the National Interim Primary Drinking Water Regulations as contained on the RGF. These regulations specify the number of samples required, analysis methods allowed, and contaminant levels permitted. In some instances Federal standards are modifiable by the States (for example, as in 141.27, using alternative analytical techniques). A State may also choose to enforce its own, more stringent standards, in which case, a Public Water System (PWS) may be in violation of the state's standards, but not of the federal standards.

The RGF is used by the Water Quality Compliance Subsystem (WAQC) for determining Maximum Contaminant Level (MCL) and Sampling Violations and for scheduling samples and subsequent analysis for a given PWS.

2. REGS Visual Table of Contents

Diagram Type: VTOC
Diagram No: 3
Subsystem: Regulations
Description: Regulations Subsystem VTOC

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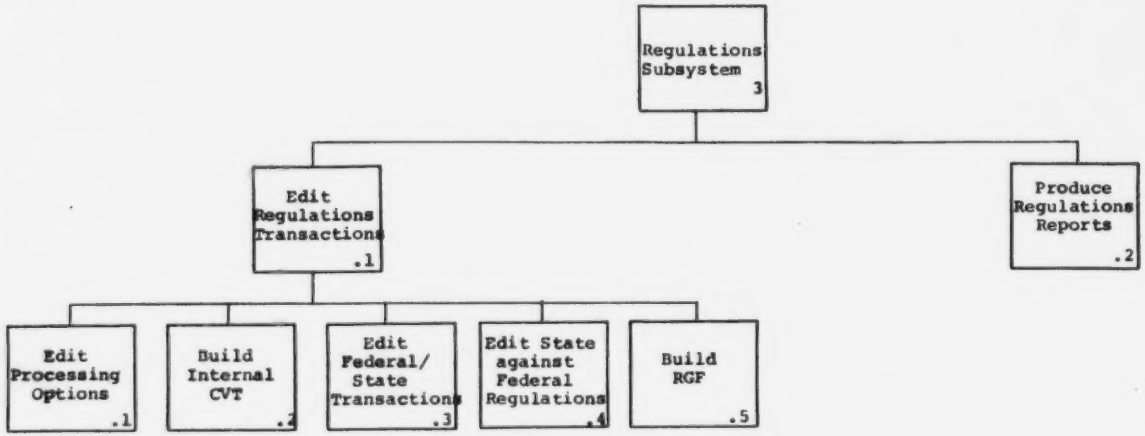


VISUAL TABLE OF CONTENTS

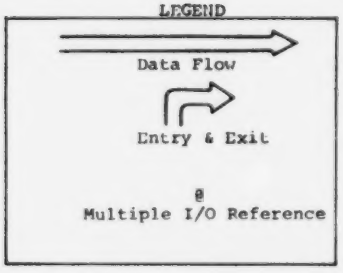
3.0 - Regulations Subsystem

3.1 - Edit Regulations Transactions

- 3.1.1 - Edit Processing Options
- 3.1.2 - Build Internal Code Value Tables (CVT)
- 3.1.3 - Edit Federal/State Transactions
- 3.1.4 - Edit State Data against Federal Regulations
- 3.1.5 - Build Regulations File (RGF)

3.2 - Produce Regulations File Report

LEGEND



3. REGS Subsystem Overview

The Regulations Subsystem consists of only two modules (REGS010 and REGS020) whose functions are to accept input transactions to create the Regulations File (RGF) and list its contents.

The fundamental structure of the RGF follows the National Interim Primary Drinking Water Regulations. If a State defines its regulations differently, the file formats may not fit the structure of the State regulation and a special interface must be developed for that State. States may, however, add contaminants to the file so long as the basic structure of the record is not violated.

The input consists of cards keypunched from the Regulations Subsystem input forms (Exhibits REGS.101 to 108). The output comprises the Regulations Tables and Reports (Exhibit REGS.301 - 308). The process consists of reading and editing all input transactions, creating a new RGF and listing its contents.

Since the regulations are expected to be fairly static once established, the system does not provide individual record update capability. Each time a regulation is changed, data from the new set of keypunched cards entirely rebuilds the RGF. However, states that have access to sophisticated computerized text editors may wish to maintain the RGF through such existing procedures.

NARRATIVE

SUBSYSTEM: REGULATIONS

PROGRAM NAME: REGS010

DATE: 9/23/76

I. OJBECTIVE:

This program will create the MSIS Regulations File based on the National Interim Primary Drinking Water Regulations. This Regulations File will contain both Federal and State defined regulations for monitoring the quality of water.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Chemicals Regulations Transactions	RGI-CHMI-RECORD RGI-CHM2-RECORD	REGS.101 REGS.101	REGS.200 REGS.201
2.	Turbidity Regulations Transactions	RGI-TURB-RECORD	REGS.102	REGS.202
3.	Population Table for Bacteriological Sampling Transactions	RGI-BPOP-RECORD	REGS.103	REGS.203
4.	Bacteriological Regulations Transactions	RGI-BACT-RECORD	REGS.104	REGS.204
5.	Fluoride MCL Table Transactions	RGI-FLOR-RECORD	REGS.105	REGS.205
6.	Major Beta Emitters Table Transactions	RGI-EMIT-RECORD	REGS.106	REGS.206
7.	Gross Alpha Regulations Transactions	RGI-ALFA-RECORD	REGS.107	REGS.207
8.	Gross Beta Regulations Transactions	RGI-BETA-RECORD	REGS.108	REGS.208
9.	Code Value Table	CVT-RECORD		MSIS.206

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	RGI-PROC-RECORD	REGS.100	REGS.209

III. OUTPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Chemical Regulations	RGF-CHEM-RECORD	REGS.209
2.	Turbidity Regulations	RGF-TURB-RECORD	REGS.210
3.	Population Table for Bacteriological Sampling	RGF-BPOP-RECORD	REGS.211
4.	Bacteriological Regulations	RGF-BACT-RECORD	REGS.212
5.	Fluoride MCL Table	RGF-FLOR-RECORD	REGS.213
6.	Major Beta Emitters Table	RGF-EMIT-RECORD	REGS.214
7.	Gross Alpha Regulations	RGF-ALFA-RECORD	REGS.215
8.	Gross Beta Regulations	RGF-BETA-RECORD	REGS.216
9.	Standard Error File (SEF)	SEF-RECORD	MSIS.207
10.	Error Processing Options	SEF-PROC-RECORD	MSIS.208

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Data Entry Report	REGS.300
2.	Update Statistics Report	MSIS.300

C. Turnaround Documents:

Not Applicable

III. FUNCTIONS:

1. The Processing Options are edited for errors. All errors will produce error messages and an invalid date will stop the job from being processed.

2. Internal code value tables are built from information contained in the Code Value Table (CVT). These code values are used to edit some of the data element values to make certain they are acceptable.

3. The Federal Regulation Transactions are edited for syntax errors. If none are found, the run continues; else the Standard Error File records are created and the job is stopped without the State Regulation Transactions being edited. If there were no Federal errors, the State Regulation Transactions are edited for syntax errors. Similar to the Federal Regulation Transactions, if errors are found, Standard Error File (SEF) records are produced and the job is terminated. Thus, in order to create a Regulations File, all the input (State/Federal) Regulation Transactions must be error free. This is done to make sure that only a complete Regulations File (RGF) is used for determining violations.

4. If the State Regulation Transactions had no syntax errors, they are checked against the Federal regulations for stringency. Any State regulations less stringent than Federal regulations generate SEF records and prevent the creation of the new RGF.

5. If there were no State stringency errors, the new Regulations file is built from the edited Federal and State regulations.

IV. ASSOCIATED DOCUMENTS

A. Data Entry and Keypunch Instructions:

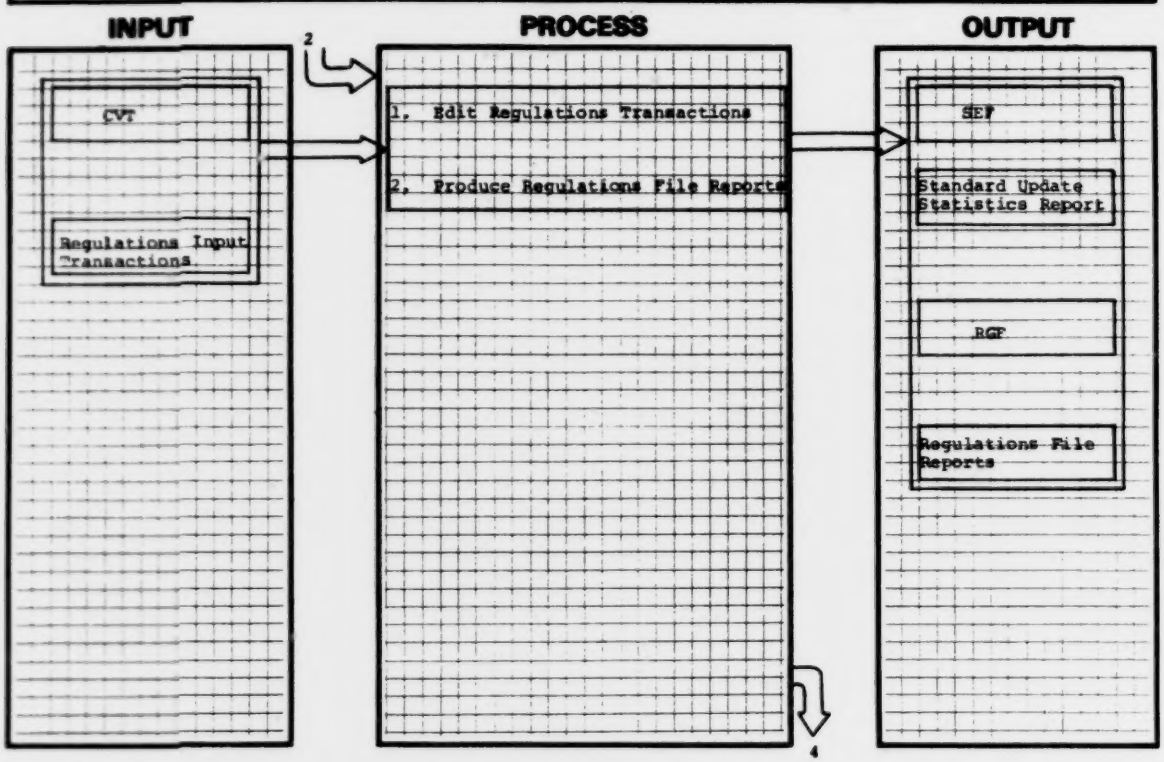
1. Processing Options
2. Chemical Contaminants
3. Turbidity Contaminant
4. Population Table for Bacteriological Sampling
5. Bacteriological Sampling
6. Fluoride MCL Table
7. Major Beta Emitters Table
8. Gross Alpha Contaminants
9. Gross Beta Contaminants

B. Data Entry and Keypunch Instructions:

1. Regulations File (RGF)

MODEL STATE INFORMATION SYSTEM

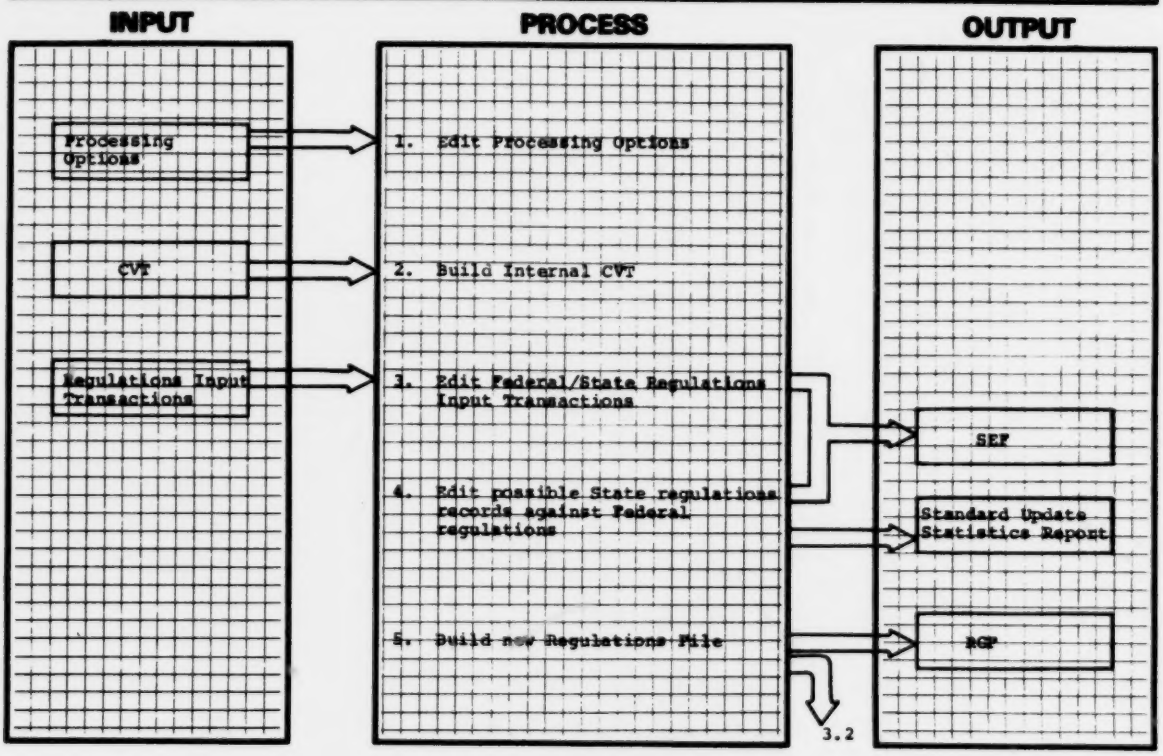
Diagram Type: Overview **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 **of** 1
Diagram No.: 3 **Description:** Regulations Subsystem



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Regulations transactions for syntax errors against internal code values tables built from the Code Values Table (CVT). Edit State data against Federal regulations to be sure the State regulations are at least as stringent as the Federal regulations. If any edit errors, build the Standard Error File (SEF); else if no errors, build the Regulations File (RGF). The Federal Regulations used as standards for MSIS are the National Interim Primary Drinking Water Regulations as per Title 40, Chapter 1, part 141.	3.1	REGS010	
2	The Regulations Reports are printed. NOTE: Input cards are sorted by State/Federal Contaminant-ID and Card Code before they are edited. All cards must be present for the Federal Regulations creations. Missing cards or data on the cards (for Federal regulations) is an error and prevents the creation of the State regulations and the Regulations File. Missing cards or data on the cards (for State regulations) is substituted by the appropriate Federal data.	3.2	REG010	

MODEL STATE INFORMATION SYSTEM

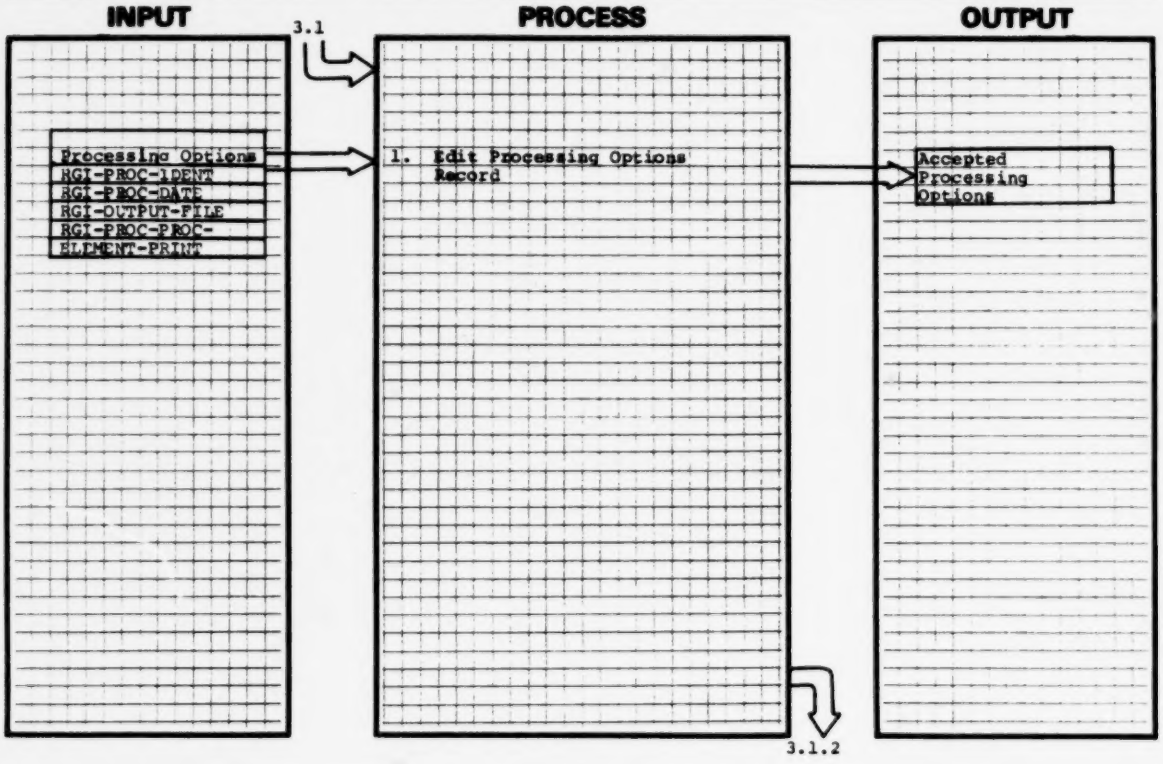
Diagram Type: Overview **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 **of** 1
Diagram No.: 3.1 **Description:** Edit Regulations Data



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Processing Options. If in error, stop the run.	3.1.1	REGS010	210 100
2	Build Internal Code Value Table (CVT) by selecting records from the external Code Value Table (CVT) based on CV-FILE-ID of 'RG' and 'MS' and store internally.	3.1.2	REGS010	209 DED
3	Edit Federal transactions for errors. If input record is in error, build a Standard Error File (SEF) Record. If input record is not in error, build a Federal regulations record. When all Federal records have been edited, count the number of errors. If one or more errors, the run is stopped. If no errors, a temporary Federal Regulations File is created and the State input data is then edited. If the State record is in error, a Standard Error record is built. If not in error, a possible State Regulations record is built. When all the State records have been edited, the State errors are counted. If one or more errors, the run is stopped.	3.1.3	REGS010	101 to 108 200 to 208 250 to 258
4	The Possible State Regulation records from step 3 are checked against the Temporary Federal Regulations records from Step 3, to be sure that the State regulations are at least as stringent as the Federal regulations. If any State regulations are less stringent, it is an error and a Standard Error record is built.	3.1.4	REGS010	258
5	If no errors in Step 3 or 4, Possible State and Temporary Federal Files are consolidated into the new Regulations File (RGF).	3.1.5	REGS010	250 to 251
	Note: Error codes are located in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

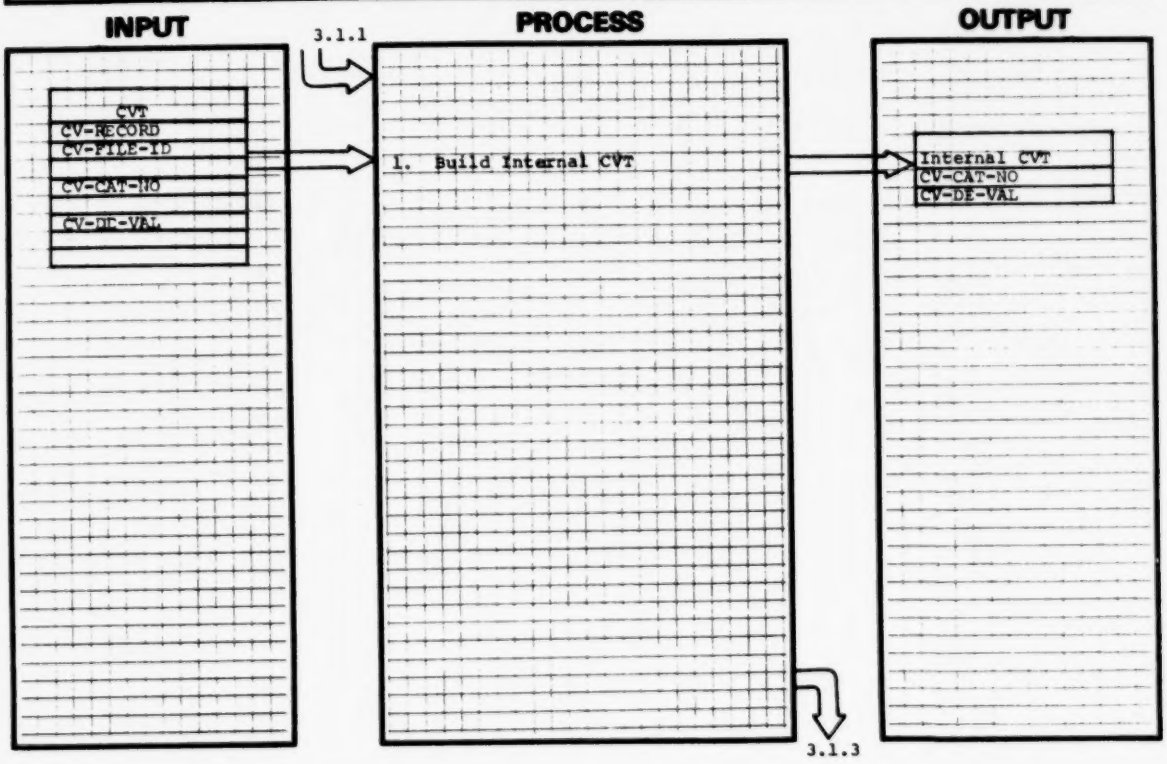
Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 **of** 1
Diagram No.: 3.1.1 **Description:** Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Processing Options. If the date, which is used by the Regulations Report is in error, then print 2 lines of '*' followed by the message '*JOB TERMINATED - INVALID DATE*' followed by 2 more lines of '*'. If not in error, build first record of Standard Error File (SEF).		REGS010	210 100 259

MODEL STATE INFORMATION SYSTEM

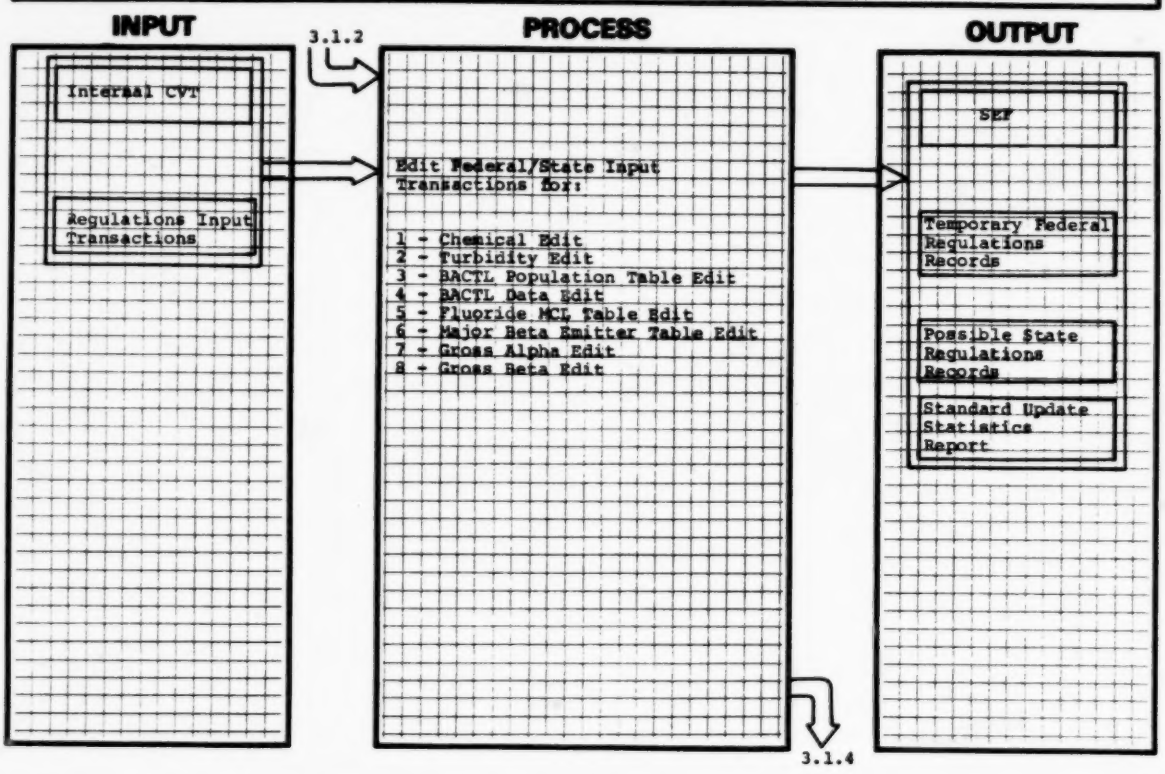
Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1
Diagram No.: 3.1.2 **Description:** Build Internal Code Value Tables



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Code Value Table (CVT) of data element values. Appropriate records are stored internally to be used later as edit criteria. These values are contained in two external CVT files. One contains only the values for editing the Regulation File and thus is stored in its entirety. The other has values for common data elements existing in more than one file, some of which belong to the RGF. Only values for Contaminant ID and nuclear facility type are stored from this common file.		REGS010	209

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1
Diagram No.: 3.1.3 **Description:** Edit Federal/State Data

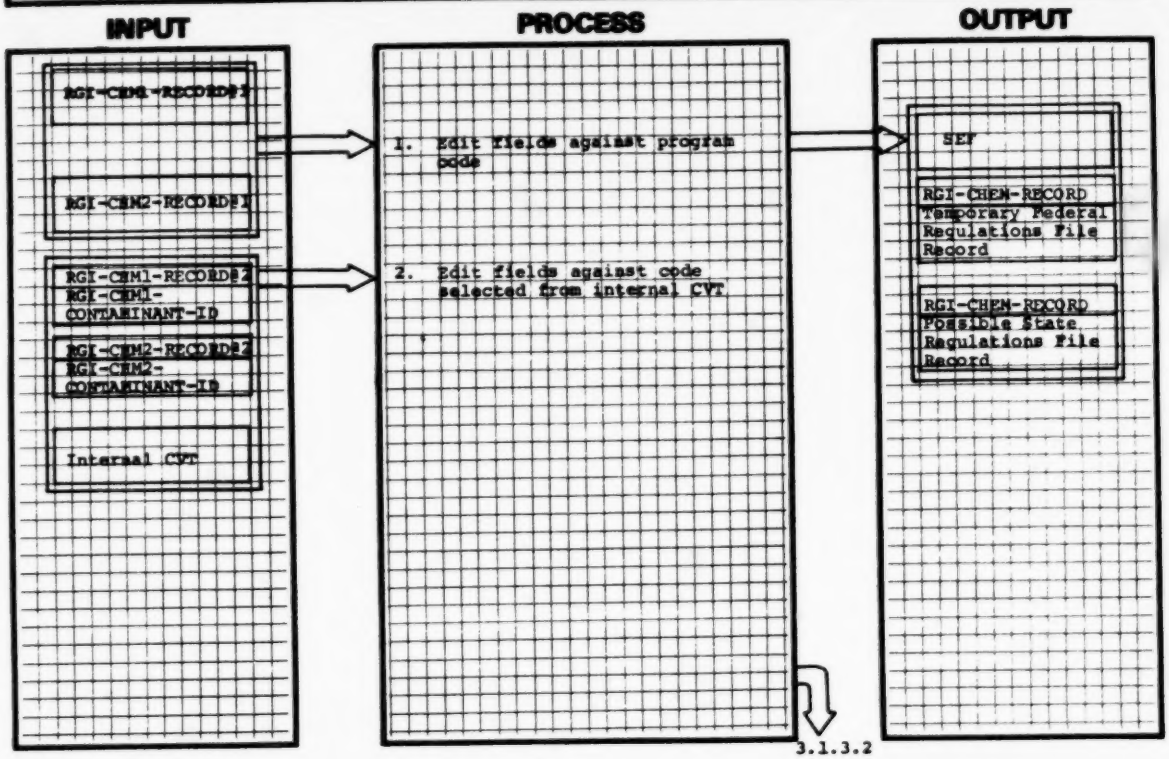


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1 - 9	Edit Federal regulations input transactions for syntax errors. If no errors, build Federal regulations records. If errors, build Standard Error File (SEF) records. If no Federal Edit errors, then edit State regulations input data for syntax errors, else stop the run. If no errors, build State regulations records. If errors, build Standard Error records and stop the run. Standard Update Statistics Report is produced. Note: All 4 files are passed to 3.1.4.	3.1.3.1 through 3.1.3.8	REGS010	200 to 208 250 to 258 300

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Regulations Subsystem Date: 9-23-76 Page: 1 of 1

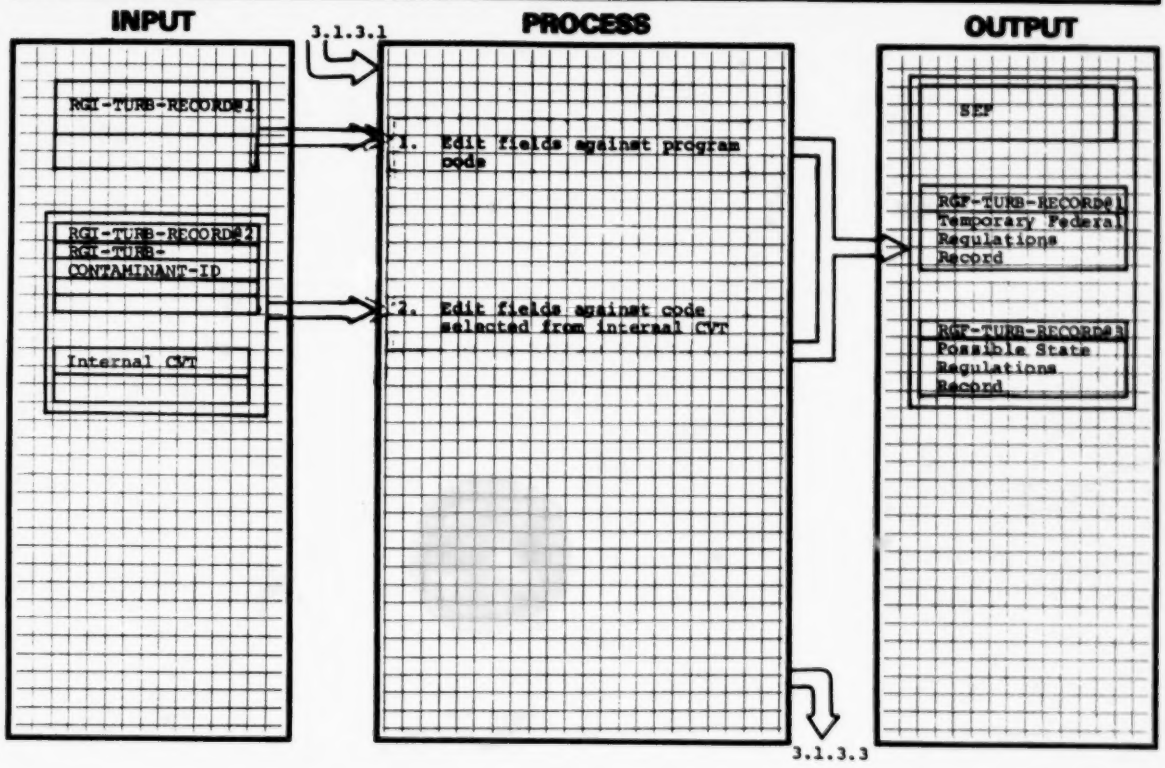
Diagram No.: 3.1.3.1 Description: Edit Chemical Data



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Chemical Regulations input data, RGI-CHM1-RECORD, RGI-CHM2-RECORD, against criteria hand-coded, into the program.		REGS010	101 200 201 DED
2	Edit Chemicals Regulations input data, RGI-CHM1-RECORD, RGI-CHM2-RECORD against criteria stored in internal Code Value Table (CVT) loaded in 3.1.2.		REGS010	200 201 DED 250 258
	In both steps, if there are no errors, a regulation file record is built and added to either the Federal file as RGP-CHEM-RECORD@1, or to the possible state file as RGP-CHEM-RECORD@2.			
	If there are errors, a standard arror record, SEF-RECORD, is built instead of a regulation record, and added to the Standard Error File (SEF).			
	Note: Both the Federal and Possible State regulations records are the same formats, differing only by RGP-CHEM-REGU-LEVEL.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1
Diagram No.: 3.1.3.2 **Description:** Edit Turbidity Data

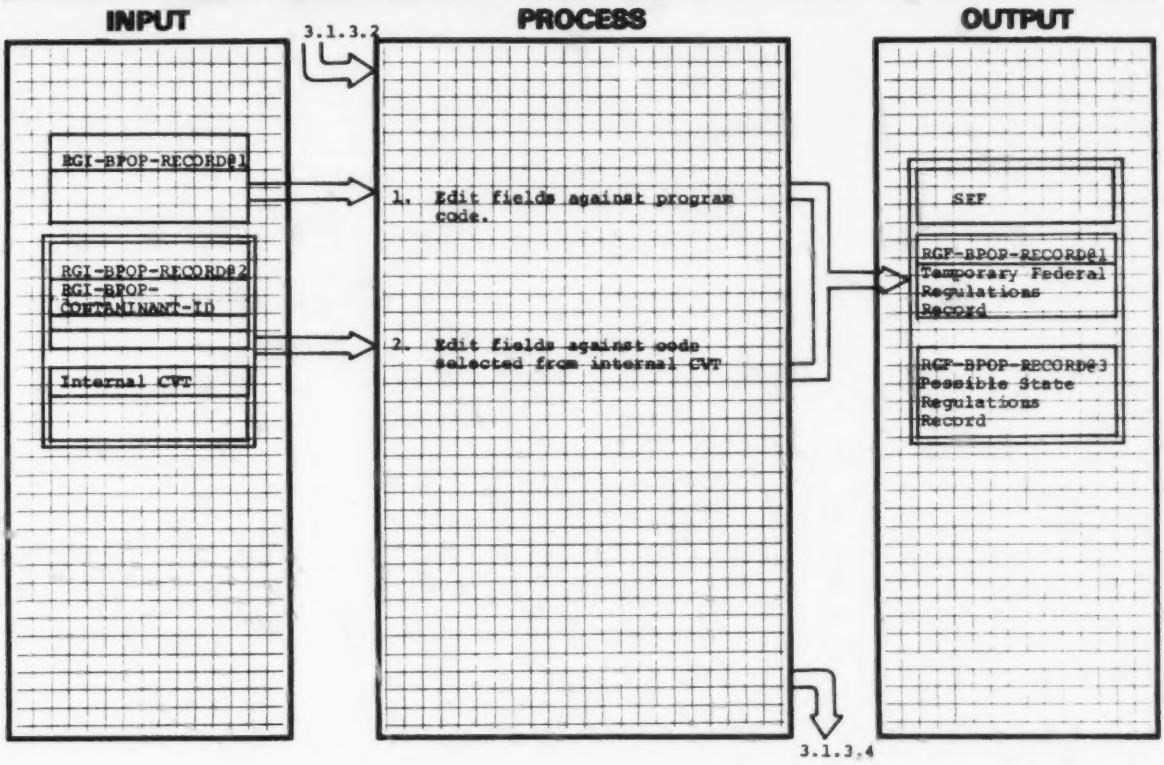


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Turbidity regulations input data, RGI-TURB-RECORD@1, against edit criteria hand-coded into the program.		REGS010	102 202 DED
2	Edit Turbidity regulations input data, RGI-TURB-RECORD@2, against edit criteria stored in internal Code Value Table (CVT) loaded in 3.1.2.		REGS010	102 202 DED 251 258
	In both steps, if there are no errors, a regulation file record is built and added to either the Federal file as RGF-TURB-RECORD@1, or to the possible state file as RGF-TURB-RECORD@2.			
	If there are errors, a standard error record, SEF-RECORD is built instead of a regulation record, and added to the Standard Error File (SEF).			
	Note: Both the Federal and Possible State regulation records are the same formats, differing only by RGF-TURB-REGU-LEVEL.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1

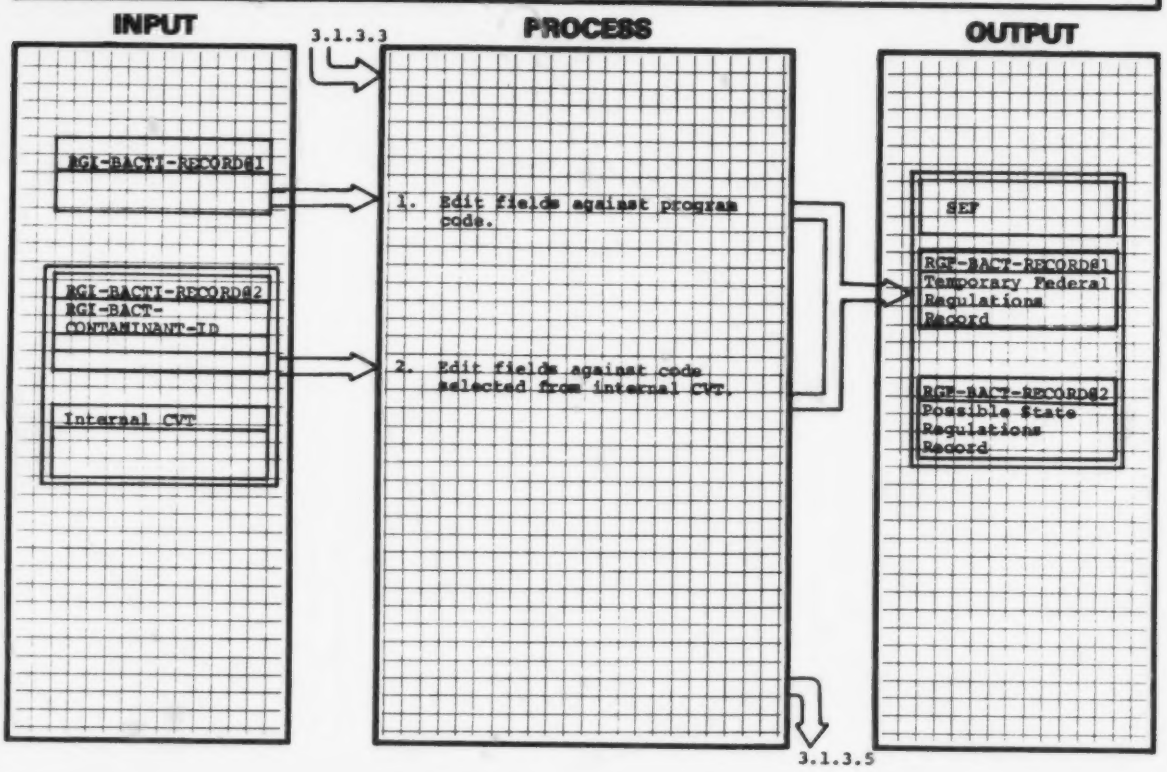
Diagram No.: 3.1.3.3 **Description:** Edit BACTI Population Table Data



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit BACTI Population Regulations input data, RGI-BPOP-RECORD@1, against edit criteria hand-coded into the program		REGS010	103 203 DED
2	Edit BACTI Population Regulations input data, RGI-BPOP-RECORD@2, against edit criteria stored in internal Code Value Table (CVT) loaded in 3.1.2.		REGS010	103 203 252 258 DED
	In both steps, if there are no errors, a regulation file record is built and added to either the Federal file as RGF-BPOP-RECORD@1, or to the possible state file as RGF-BPOP-RECORD@2.			
	If there are errors, a standard error record, SEF-RECORD is built instead of a regulation record, and added to the Standard Error File (SEF).			
	Note: Both the Federal and Possible State regulation records are the same formats, differing only by RGF-BPOP-REGU-LEVEL.			

MODEL STATE INFORMATION SYSTEM

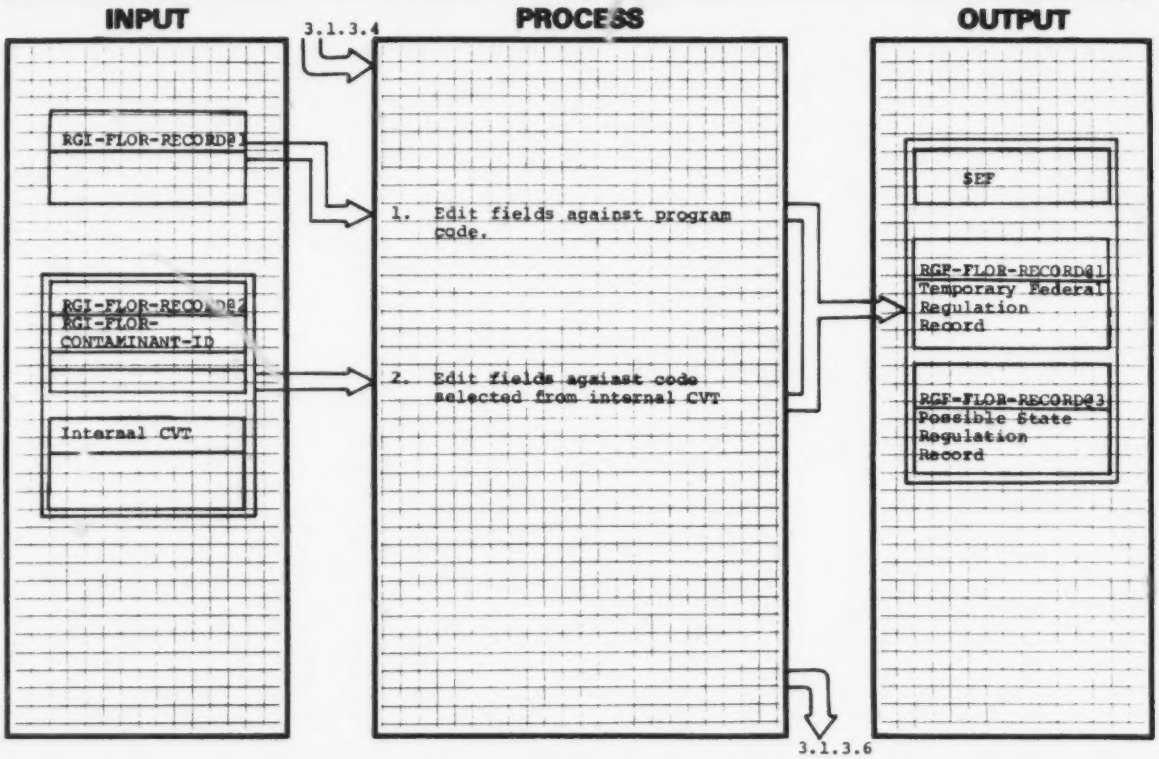
Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1
Diagram No.: 3.1.3.4 **Description:** Edit BACTI Data



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Bacteriological Regulations input data, RGI-BACT-RECORD@1, against edit criteria hand-coded into the program.		REGS010	104 204 DED
2	Edit Bacteriological Regulations input data, RGI-BACT-RECORD@2, against edit criteria stored in internal Code Value Table (CVT) loaded in 3.1.2.		REGS010	104 204 253 258 DED
	In both steps, if there are no errors, a regulation file record is built and added to either the Federal file as RGF-BACT-RECORD@1, or to the possible state file as RGF-BACT-RECORD@2.			
	If there are errors, a standard error record, SEF-RECORD is built instead of a regulations record, and added to the Standard Error File (SEF).			
	Note: Both the Federal and Possible State regulation records are the same formats, differing only by RGF-BACT-REGU-LEVEL.			

MODEL STATE INFORMATION SYSTEM

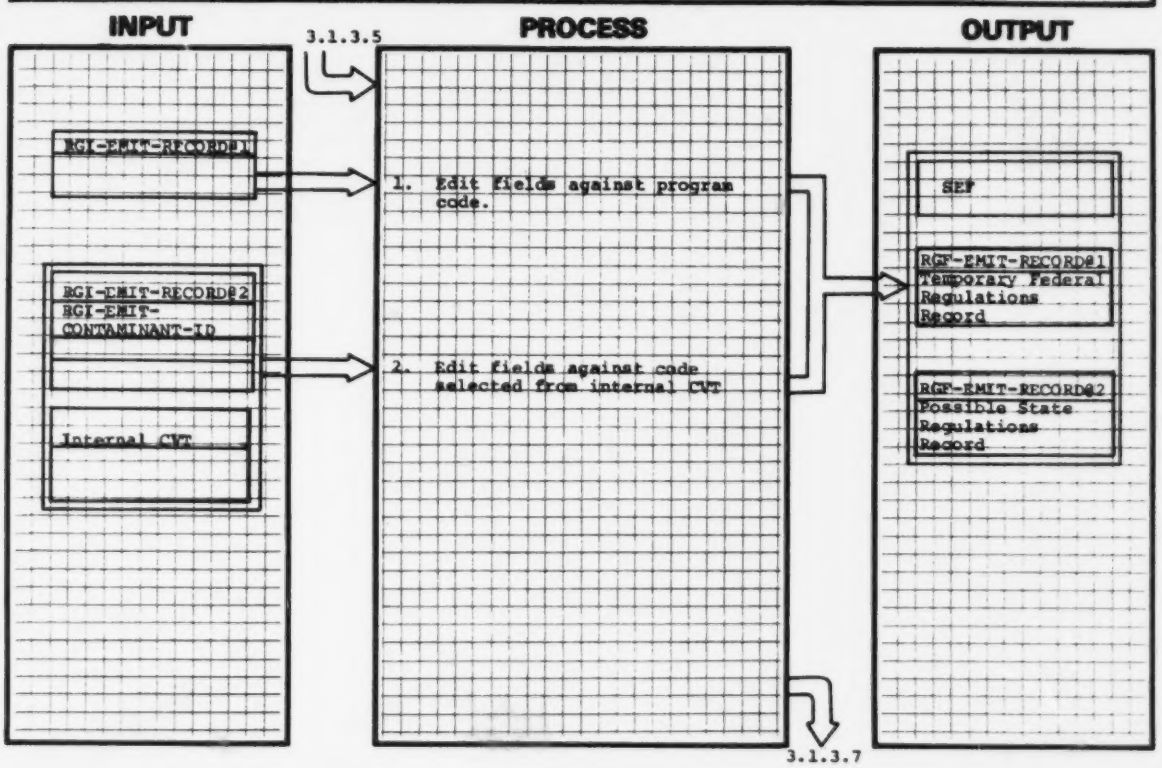
Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1
Diagram No.: 3.1.3.5 **Description:** Edit Fluoride Data



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Fluoride MCL Table Regulations input data, RGI-FLOR-RECORD@1, against edit criteria hand-coded into the program.		REGS010	105 205 DED
2	Edit Fluoride MCL Table Regulations input data, RGI-FLOR-RECORD@2, against edit criteria stored in internal Code Value Table (CVT) loaded in 3.1.2. In both steps, if there are no errors, a regulation file record is built and added to either the Federal file as RGF-FLOR-RECORD@1, or to the possible state file as RGF-FLOR-RECORD@2. If there are errors, a standard error record, SEF-RECORD is built instead of a regulation record, and added to the Standard Error File (SEF). Note: Both the Federal and Possible State regulation records are the same formats, differing only by RGF-FLOR-REGU-LEVEL.		REGS010	105 205 254 258 DED

MODEL STATE INFORMATION SYSTEM

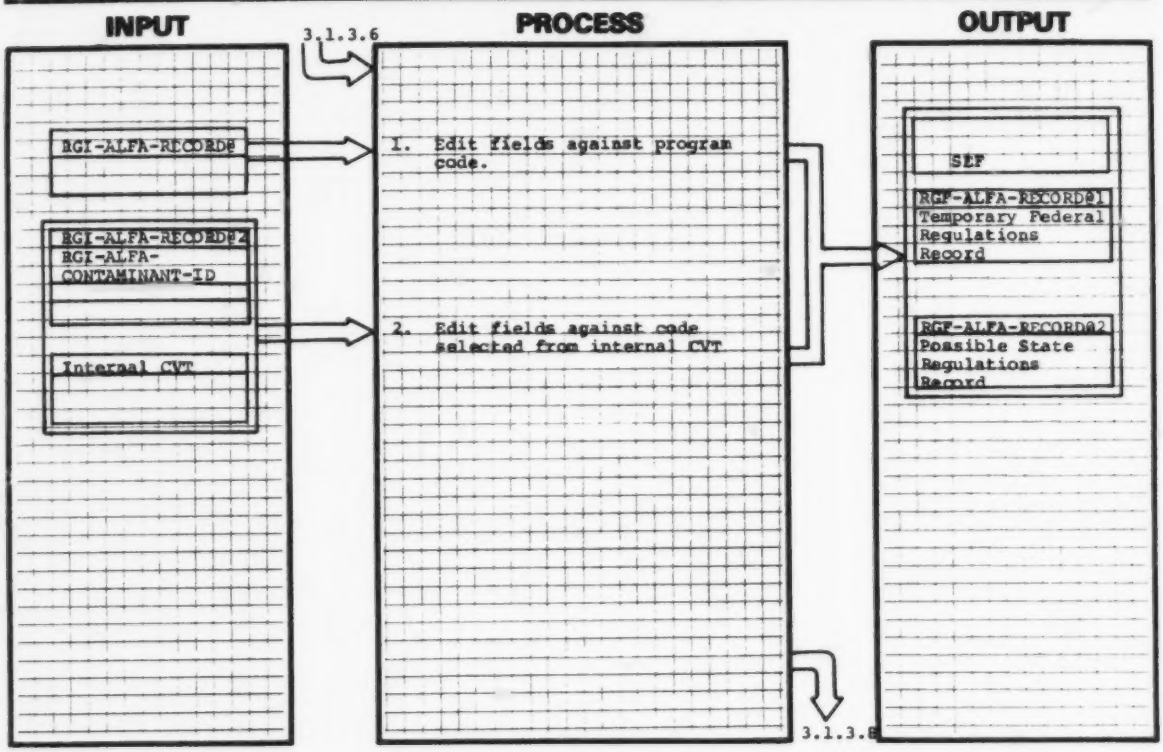
Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1
Diagram No.: 3.1.3.6 **Description:** Edit Major Beta Emitters Data



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Major Beta Emitters Table Regulations input data, RGI-EMIT-RECORD@1, against edit criteria hand-coded into the program.		REGS010	106 206 DED
2	Edit Major Beta Emitters Table Regulations input data, RGI-EMIT-RECORD@2, against edit criteria stored in internal Code Value Table (CVT) loaded in 3.1.2. In both steps, if there are no errors, a regulation file record is built and added to either the Federal file as RGF-EMIT-RECORD@1, or to the possible state file as RGF-EMIT-RECORD@2. If there are errors, a standard error record, SEF-RECORD is built instead of a regulation record, and added to the Standard Error File (SEF). Note: Both the Federal and Possible State regulation records are the same formats, differing only by RGF-EMIT-REGU-LEVEL.		REGS010	106 206 255 258 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1
Diagram No.: 3.1.3.7 **Description:** Edit Gross Alpha Data

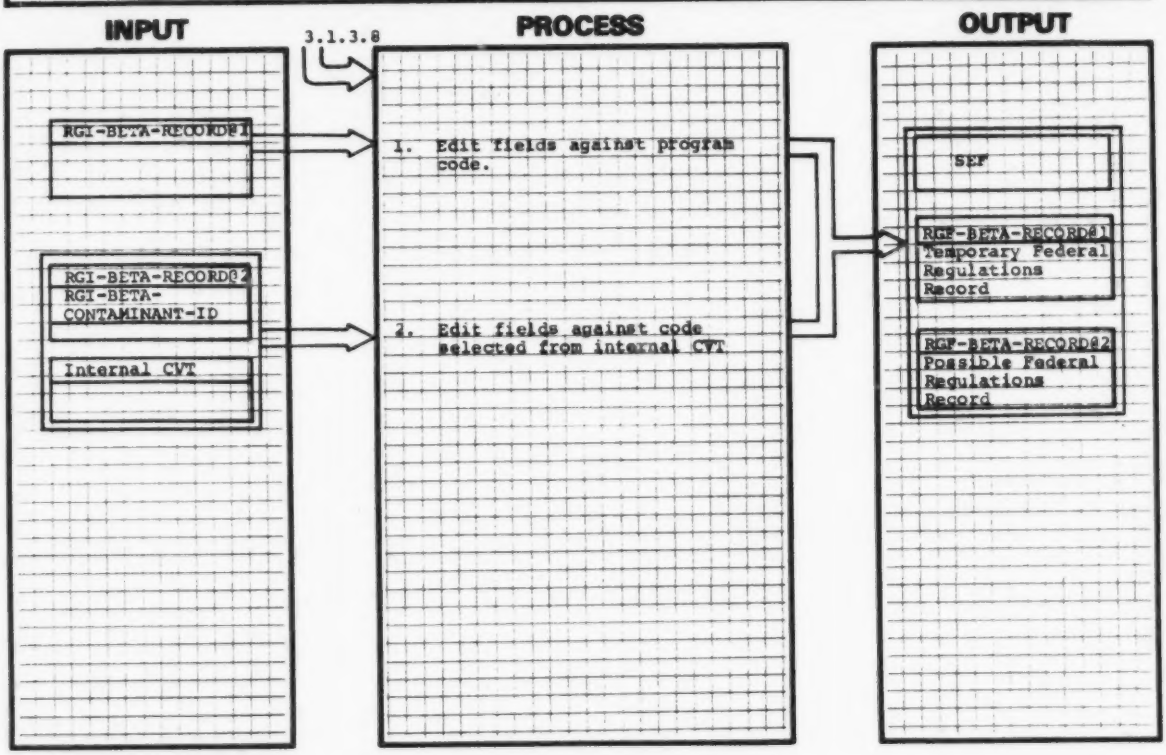


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Gross Alpha Radionuclide Regulations input data, RGI-ALFA-RECORD@1, against edit criteria hand-coded into the program.		REGS010	107 207 DED
2	Edit Gross Alpha Radionuclide Regulations input data, RGI-ALFA-RECORD@2, against edit criteria stored in internal Code Value Table (CVT) loaded in 3.1.2.		REGS010	107 207 256 258 DED
	In both steps, if there are no errors, a regulations file record is built and added to either the Federal file as RGF-ALFA-RECORD@1, or to the possible state file as RGF-ALFA-RECORD@2.			
	If there are errors, a standard error record, SEF-RECORD is built instead of a regulation record, and added to the Standard Error File (SEF).			
	Note: Both the Federal and Possible State regulation records are the same formats, differing only by RGF-ALFA-REGU-LEVEL.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1

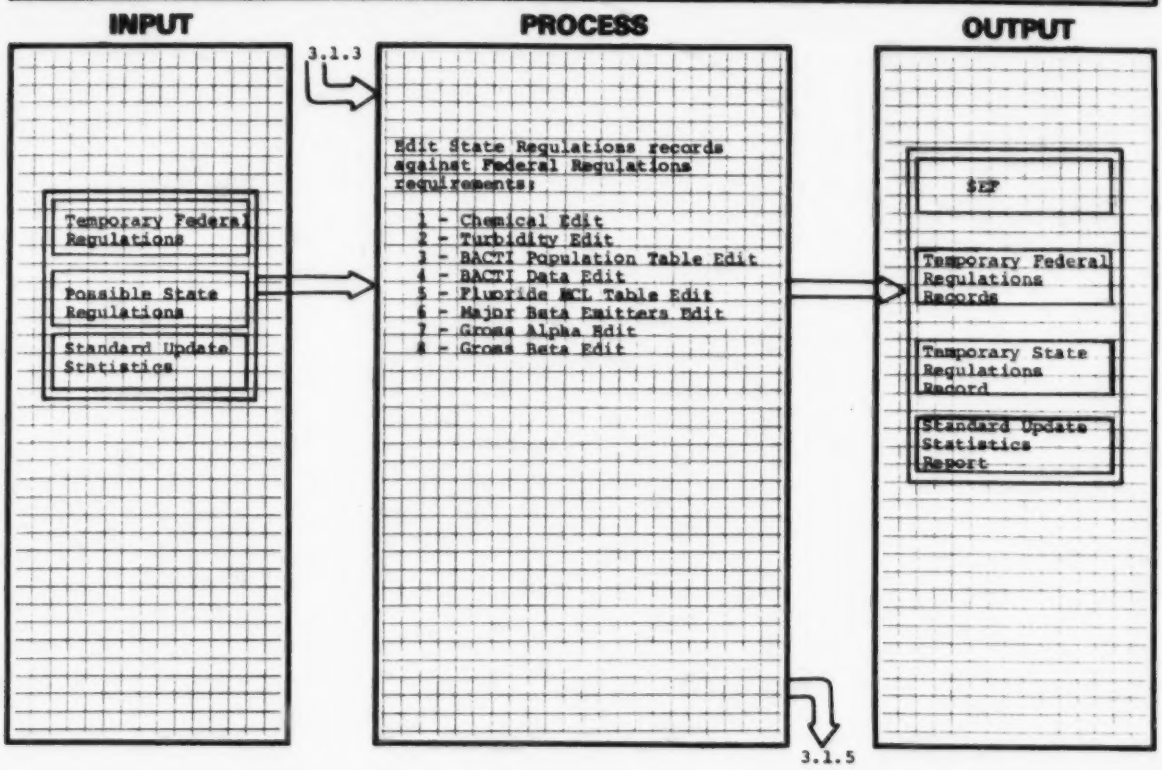
Diagram No.: 3.1.3.8 **Description:** Edit Gross Beta Data



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Gross Beta Radionuclide Regulations input data, RGI-BETA-RECORD@1, against edit criteria hand-coded into the program.		REGS010	108 208 DED
2	Edit Gross Beta Radionuclide Regulations input data, RGI-BETA-RECORD@2, against edit criteria stored in internal Code Value Table (CVT) loaded in 3.1.2.		REGS010	108 208 257 258 DED
	In both steps, if there are no errors, a regulation file record is built and added to either the Federal file as RGF-BETA-RECORD@1, or to the possible state file as RGF-BETA-RECORD@2. If there are errors, a standard error record, SEF-RECORD is built instead of a regulation record, and added to the Standard Error File (SEF). Note: Both the Federal and Possible State regulation records are the same formats, differing only by RGF-BETA-REGU-LEVEL.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 **of** 1
Diagram No.: 3.1.4 **Description:** Edit State against Federal Regulations

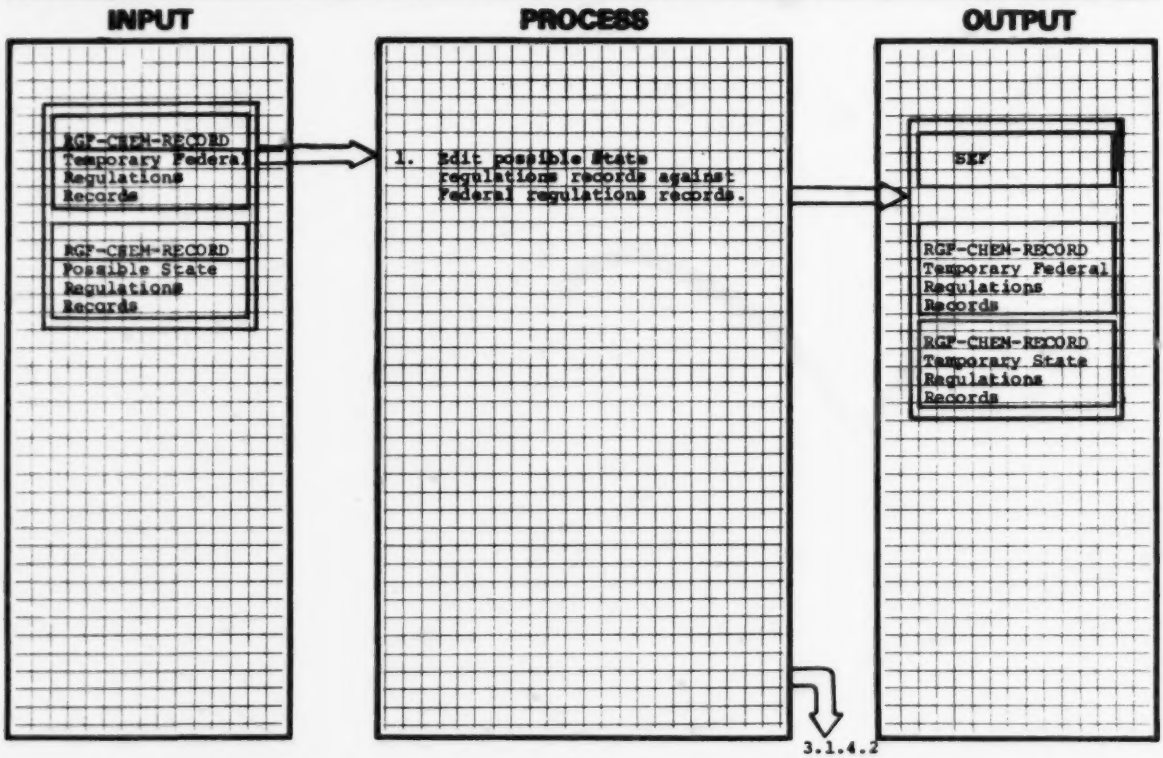


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1 - 9	Edit possible State regulations records against Federal Regulations to be sure the State regulations are at least as stringent as the Federal regulations. Any errors are added to the Standard Error File (SEF) while correct State records become the Temporary State Regulations File. The Update Statistics passed from 3.1.3 are modified by the results of 3.1.4. If there are any errors, the run is stopped and the SEF is passed to the MSIS Standard Error Process. Else, if there are no errors, the Temporary Federal and Possible State Regulations Files are passed to 3.1.5. to become the new Regulations File (RGF). Regardless of the result, the Standard Update Statistics Report is printed when 3.1.4. ends.	3.1.4.1 through 3.1.4.8	REGS010	250 to 258 300

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Regulations Subsystem Date: 9-23-76 Page: 1 of 1

Diagram No.: 3.1.4.1 Description: Edit Chemical State-to-Federal

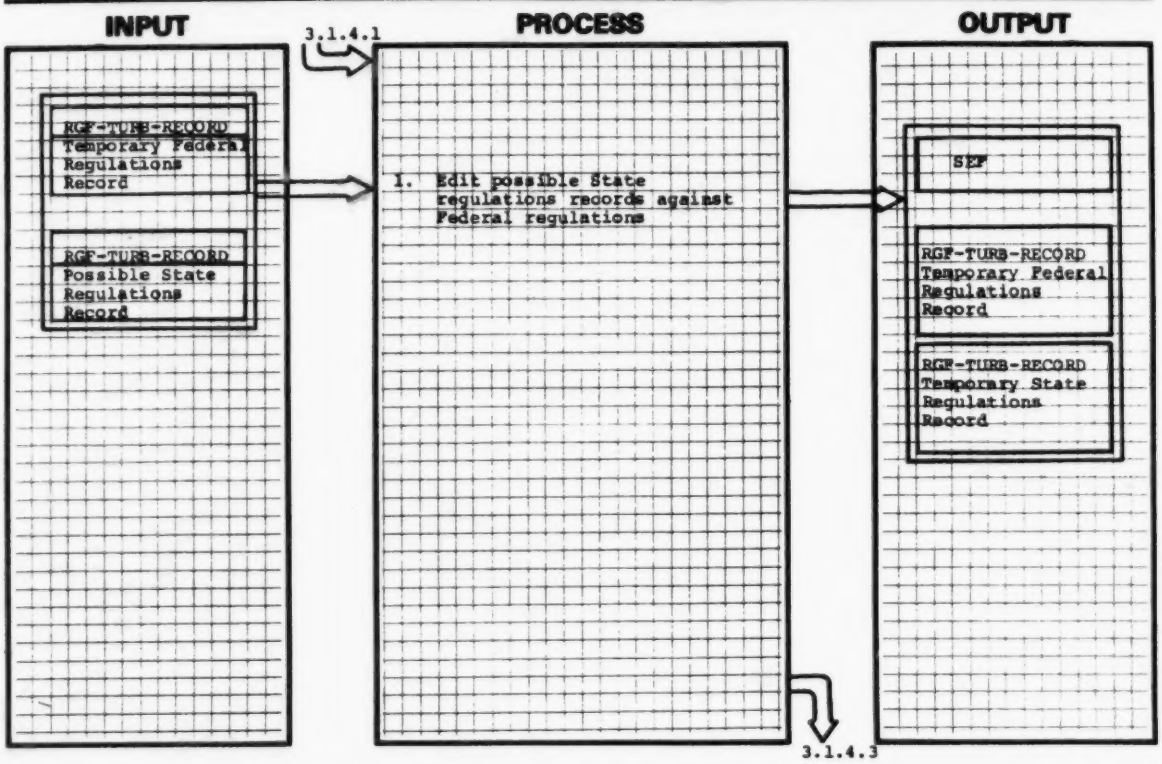


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The previously built Federal regulation records are used as standards against which the possible State regulation records are checked. If the State regulations are at least as stringent as the Federal regulations, the State records are added to the State regulations file. If any State regulations are less stringent than the Federal regulations, Standard Error Records, SEF-RECORD, are created and added to the Standard Error File (SEF), the less stringent State regulations records are dropped, and the State regulations file is not created.		REGS010	250 258

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Regulations Subsystem Date: 9-23-76 Page: 1 of 1

Diagram No.: 3.1.4.2 Description: Edit Turbidity State-to-Federal

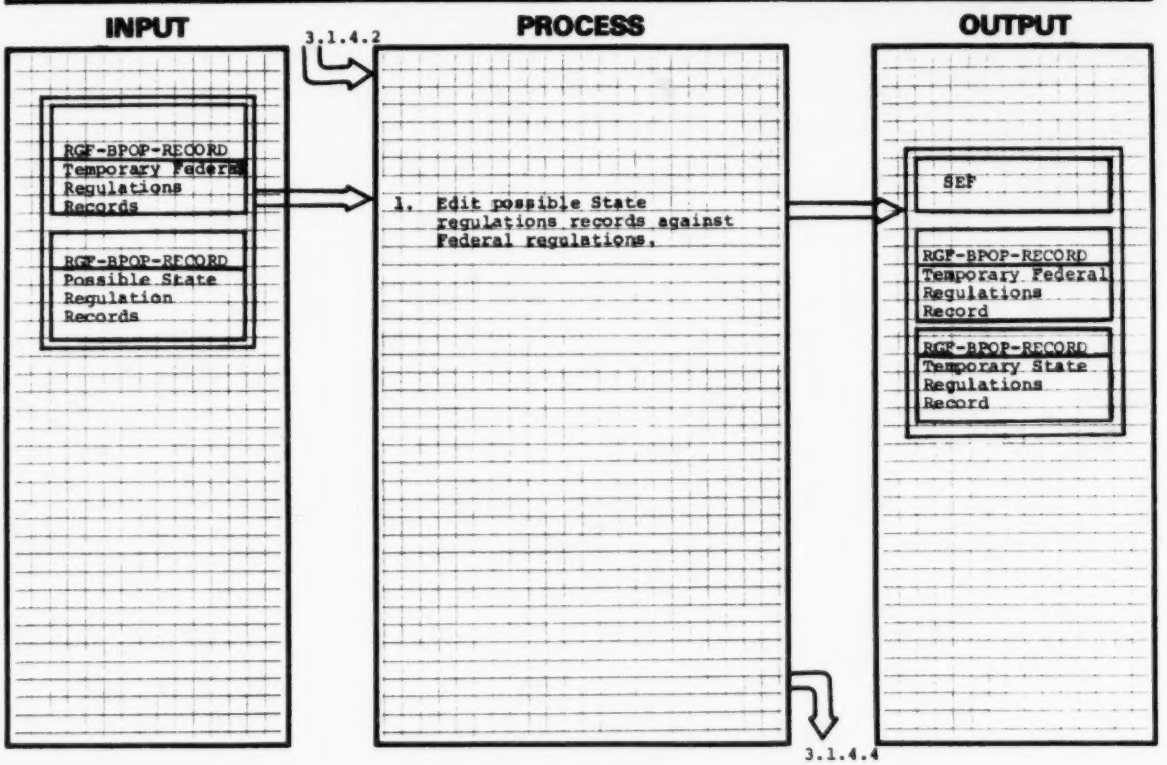


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The previously built Federal regulation records are used as standards against which the possible State regulation records are checked. If the State regulations are at least as stringent as the Federal regulations, the State records are added to the State regulations file. If any State regulations are less stringent than the Federal regulations, Standard Error Records, SEF-RECORD, are created and added to the Standard Error File (SEF), the less stringent State records are dropped, and the State regulations file is not created.		REGS010	251 258

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 **of** 1

Diagram No.: 3.1.4.3. **Description:** Edit Batch Pop. Table State-to-Federal

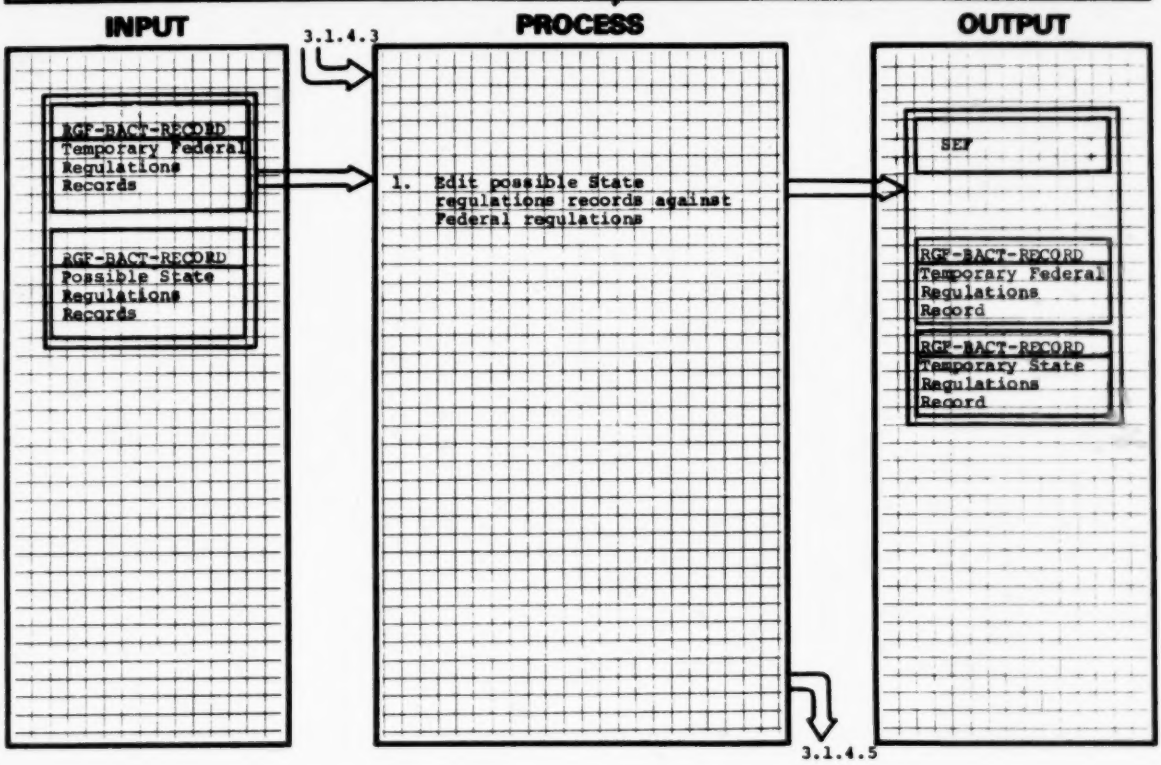


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The previously built Federal regulation records are used as standards against which the possible State regulation records are checked. If the State regulations are at least as stringent as the Federal regulations, the State records are added to the State regulations files. If any State regulations are less stringent than the Federal regulations, Standard Error Records, SEF-RECORD, are created and added to the Standard Error File (SEF), the less stringent State regulations records are dropped, and the State regulations file is not created.		REGS010	252 258

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1

Diagram No.: 3.1.4.4 **Description:** Edit BACTI Data State-to-Federal

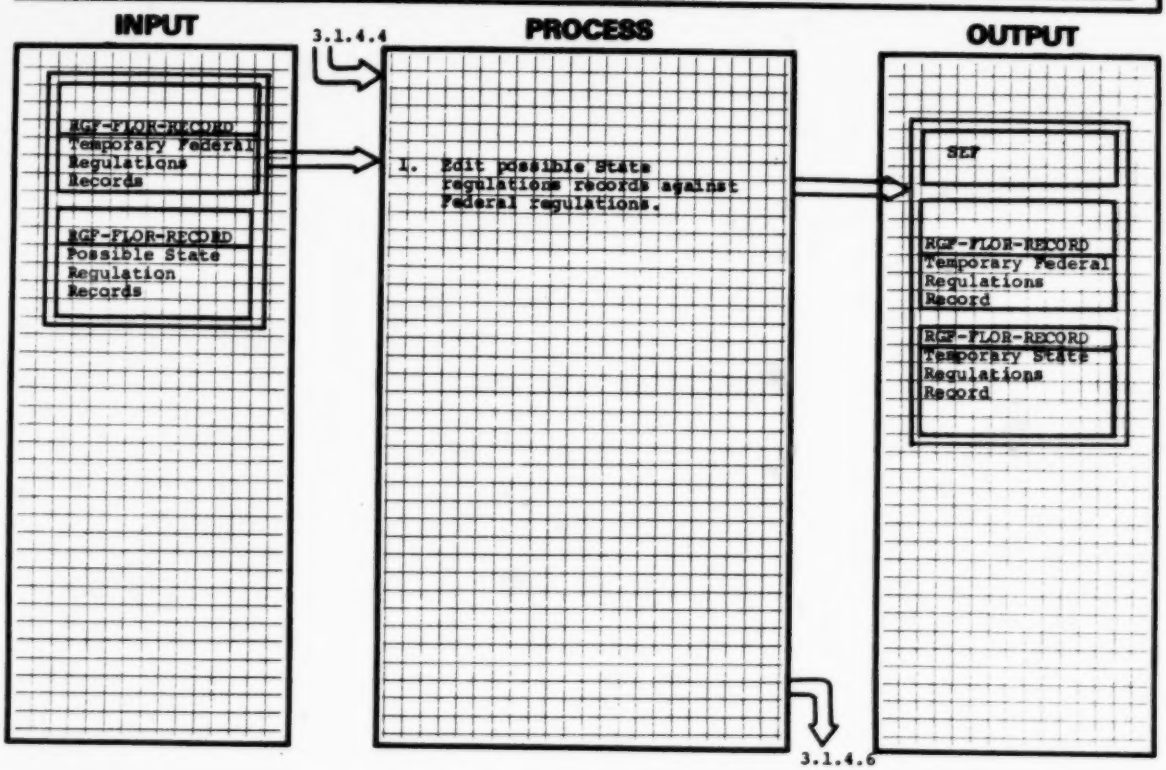


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The previously built Federal regulation records are used as standards against which the possible State regulation records are checked. If the State regulations are at least as stringent as the Federal regulations, the State records are added to the State regulations file. If any State regulations are less stringent than the Federal regulations, Standard Error Records, SEF-RECORD, are created and added to the Standard Error File (SEF), the less stringent State regulations records are dropped, and the State regulations file is not created.		REGS010	253 258

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Regulations Subsystem Date: 9-23-76 Page: 1 of 1

Diagram No.: 3.1.4.5 Description: Edit Fluoride State-to-Federal

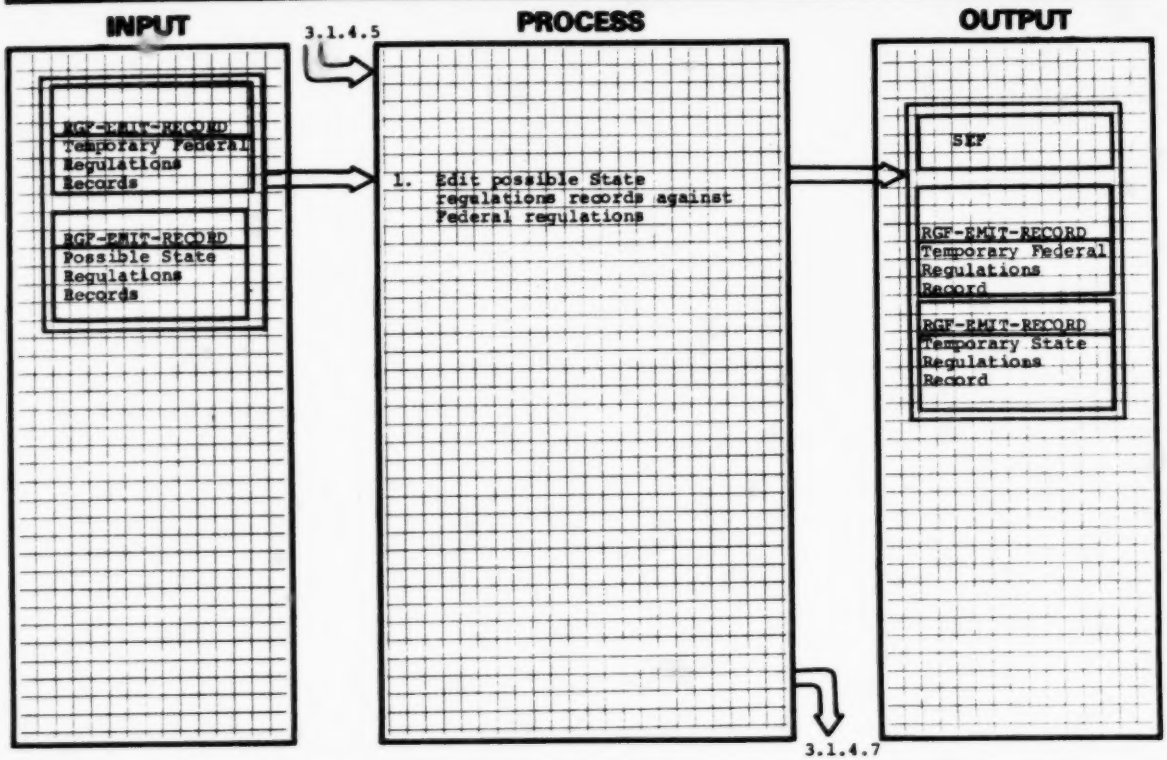


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The previously built Federal regulation records are used as standards against which the possible State regulations records are checked. If the State regulations are at least as stringent as the Federal regulations, the State records are added to the State regulations file. If any State regulations are less stringent than the Federal regulations, Standard Error Records, SEF-RECORD, are created and added to the Standard Error File (SEF), the less stringent State regulations records are dropped, and the State regulations file is not created.		REGS010	254 258

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 **of** 1

Diagram No.: 3.1.4.6 **Description:** Edit Major Beta Emitter State-to-Federal

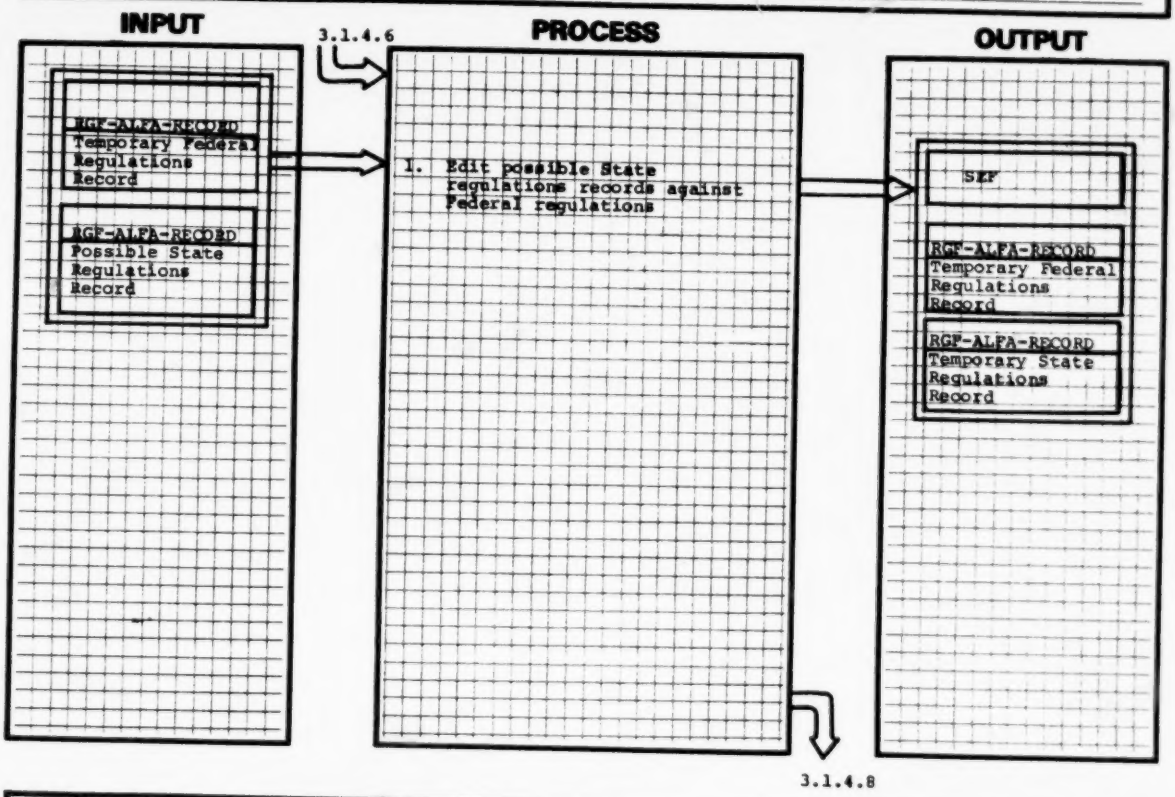


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The previously built Federal regulation records are used as standards against which the possible State regulation records are checked. If the State regulations are at least as stringent as the Federal regulations, the State records are added to the State regulations file. If any State regulations are less stringent than the Federal regulations, Standard Error Records, SEF-RECORD, are created and added to the Standard Error File (SEF), the less stringent State regulations records are dropped, and the State regulations file is not created.		REGS010	255 258

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 **of** 1

Diagram No.: 3.1.4.7 **Description:** Edit Gross Alpha State-to-Federal

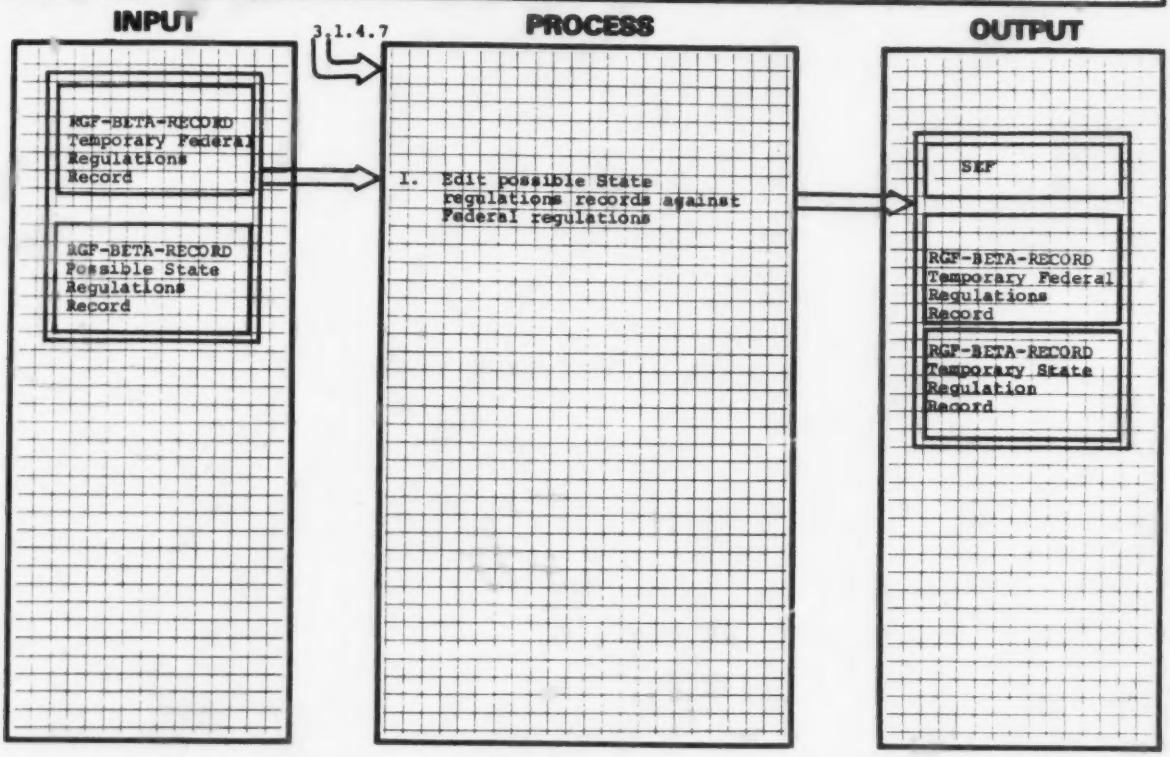


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The previous built Federal regulation records are used as standards against which the possible State regulation records are checked. If the State regulations are at least as stringent as the Federal regulations, the State records are added to the State regulations file. If any State regulations are less stringent than the Federal regulations, Standard Error Records, SEF-RECORD, are created and added to the Standard Error File (SEF), the less stringent State regulations file is not created.		REGS010	256 258

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1

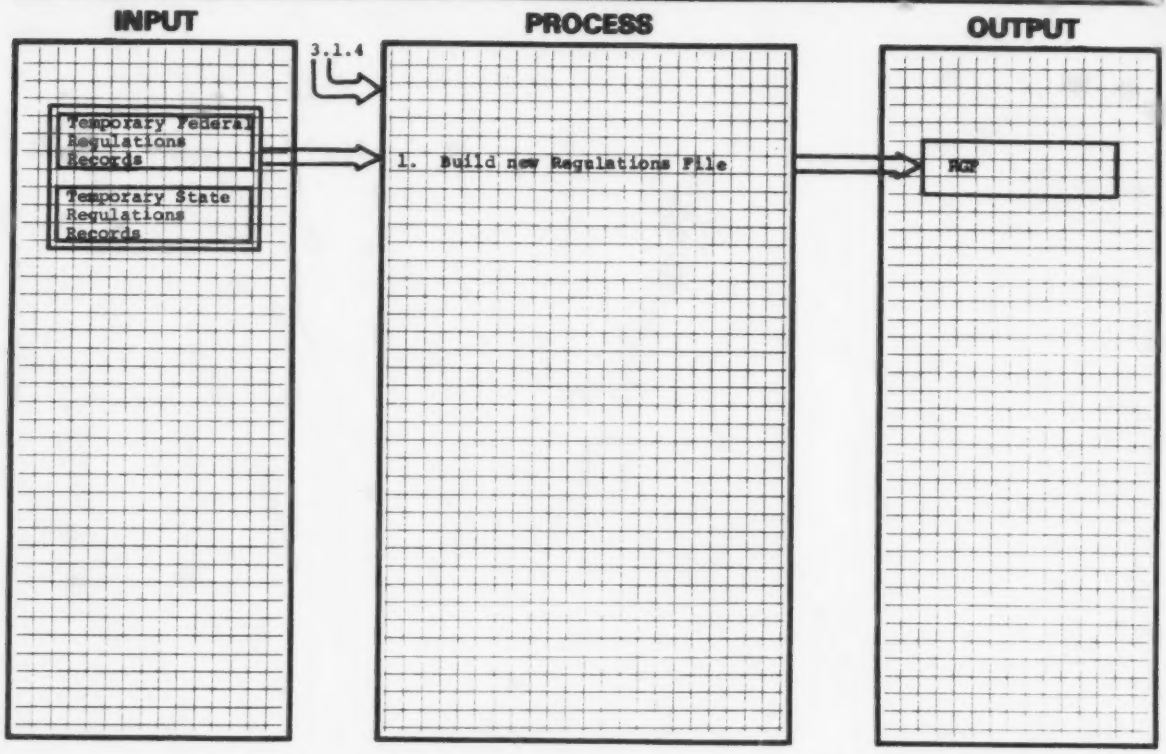
Diagram No.: 3.1.4.8 **Description:** Edit Gross Beta State-to-Federal



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The previously built Federal regulation records are used as standards against which the possible State regulation records are checked. If the State regulations are at least as stringent as the Federal regulations, the State records are added to the State regulations file. If any State regulations are less stringent than the Federal regulations, Standard Error Records, SEF-RECORD, are created and added to the Standard Error File (SEF), the less stringent State regulations records are dropped, and the State regulations file is not created.		REGS010	257 258

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 **of** 1
Diagram No.: 3.1.5 **Description:** Build Regulations File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the new Regulations File (RGF) from the Federal and State regulations files passed from 3.1.4., only if there were no edit errors; else, skip this step. Note: The Temporary Federal Regulations File, The Temporary State Regulations File, and the new permanent RGF all have the same record formats.		REGS010	250 to

NARRATIVE

SUBSYSTEM: REGULATIONS

PROGRAM NAME: REGS020

DATE: 9/23/76

I. OBJECTIVE:

This program will produce the Regulations Reports from the current Regulations File.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Chemicals Regulations	RGF-CHEM-RECORD	REGS.209
2.	Turbidity Regulations	RGF-TURB-RECORD	REGS.210
3.	Population Table for Bacteriological Sampling	RGF-BPOP-RECORD	REGS.211
4.	Bacteriological Regulations	RGF-BACT-RECORD	REGS.212
5.	Fluoride MCL Table	RGF-FLOR-RECORD	REGS.213
6.	Major Beta Emitters Table	RGF-EMIT-RECORD	REGS.214
7.	Gross Alpha Regulations	RGF-ALFA-RECORD	REGS.215
8.	Gross Beta Regulations	RGF-BETA-RECORD	REGS.216

B. Processing Options Records:

Not Applicable

III. OUTPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Standard Error File (SEF)	SEF-RECORD		MSIS.207

B. Report Layout(s):

	NAME	EXHIBIT LAYOUT
1.	Chemical Regulations Report	REGS.301
2.	Turbidity Regulations Report	REGS.302
3.	Population Table for Bacteriological Sampling Report	REGS.303
4.	Bacteriological Regulations Report	REGS.304
5.	Fluoride MCL Table Report	REGS.305
6.	Major Beta Emitter Table Report	REGS.306
7.	Gross Alpha Regulations Report	REGS.307
8.	Gross Beta Regulations Report	REGS.308

C. Turnaround Document(s):

Not Applicable

IV. FUNCTIONS:

1. The current Regulations File is read into REGS020 and the reports listed in III-B. are produced, one set for Federal Regulations and a second set for State Regulations.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

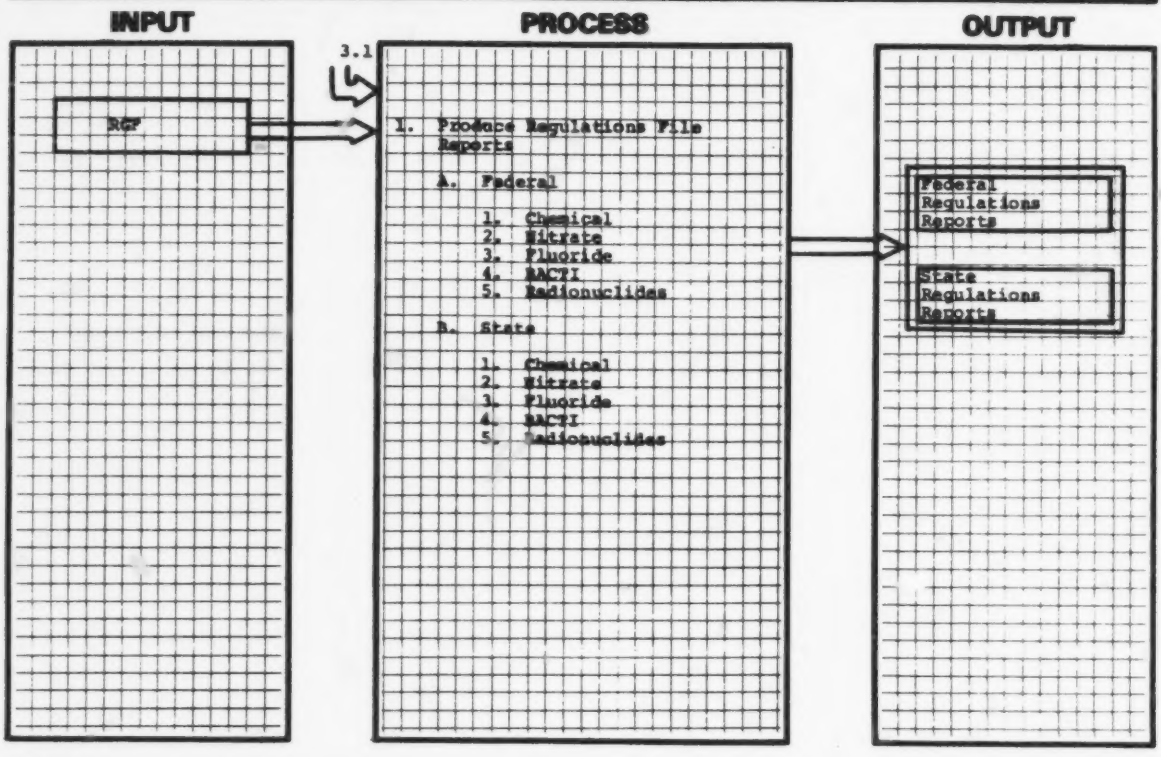
Not Applicable

B. Data Element Descriptions

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Regulations Subsystem **Date:** 9-23-76 **Page:** 1 of 1
Diagram No.: 3.2 **Description:** Produce Regulations Listings



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce Regulations File Reports for the categories shown above.		REGS020	301 to 308

Water Quality Compliance Subsystem (WAQC)

1. General Description

The Water Quality Compliance Subsystem (WAQC) is a mandatory subsystem which is designed to monitor the quality of the drinking water supplied to the public. Two levels of PWS compliance with the Safe Drinking Water Act may be defined. The first, or primary level of compliance is achieved by using those treatment, storage, and distribution methods needed to supply safe drinking water. A secondary compliance level is achieved by monitoring the quality of the drinking water being supplied to the public. This is a more indirect level and, therefore, less desirable method of detecting problems. Primary compliance actions are designed to prevent problems before they arise; secondary compliance activities are designed to identify problems and correct them after they have arisen.

Primary compliance can be controlled by a state in two ways; by a permit program for new PWS or by periodic sanitary surveys. A permit program is essentially a sanitary engineering task. The PWSI Subsystem will be used to maintain most data elements related to facilities. The Sanitary Survey Subsystem is used to schedule inspections of PWS facilities and thus provides a second way of controlling basic compliance.

Secondary compliance is accomplished by monitoring the sampling and analysis of finished water. The WAQC is designed to provide the means for this monitoring process.

There are eight requirements in the National Interim Primary Drinking Water Regulations that a PWS could violate:

(1) Maximum Contaminant Level (MCL).

(2) Sampling requirements: number, frequency, and methodology;

(3) Check sampling;

(4) State notification;

(5) Public notification;

(6) Treatment techniques;

(7) Violation of compliance schedule under a variance or exemption;

(8) Record Keeping.

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The main purpose of the WAQC is to identify violations of the first three of these regulatory requirements. In this way, the Water Quality Compliance Subsystem compliments the PWSI Subsystem and the Sanitary Survey (SRVY) Subsystem by providing data management for tracing non-compliance with the Safe Drinking Water Act.

Secondary compliance can be further classified as compliance with the National Interim Primary Drinking Water Regulations or compliance with the state's own standards. There is a need to identify both, and also to indicate if non-compliance is temporarily overruled by variances or exemptions. The WAQC Subsystem responds to this need by using the Regulations File (RGF) and the Public Water File (PWF).

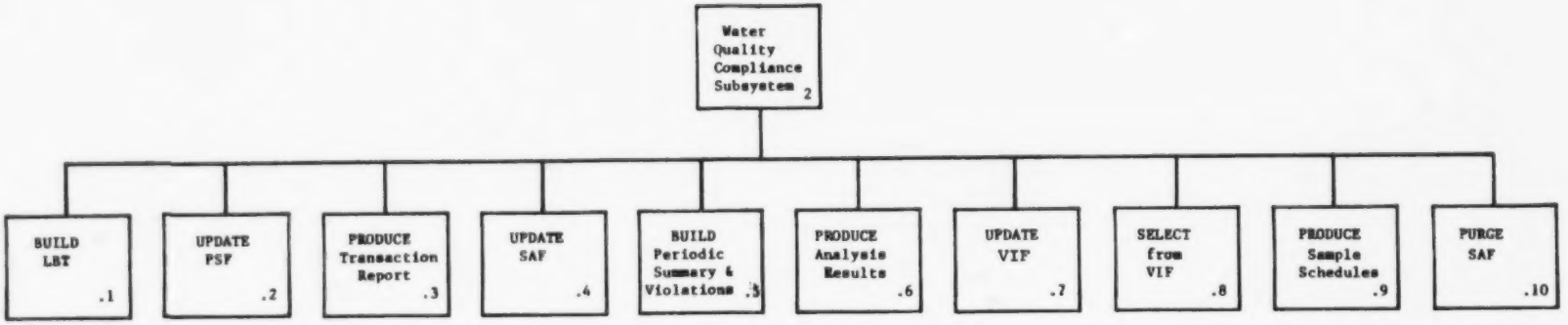
2. WAOC Visual Table of Contents

Diagram Type: VTOC

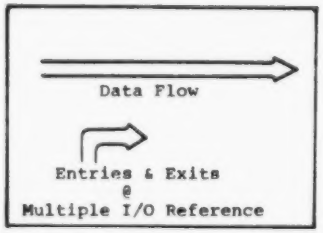
Diagram No: 2

Subsystem: Water Quality Compliance

Description: Water Quality Compliance Subsystem
Visual Table of Contents



LEGEND



VISUAL TABLE OF CONTENTS

2 - Water Quality Compliance Subsystem

2.1 - Build Laboratory Table (LBT)
2.2 - Update Periodic Sample File (PSF)
2.3 - Produce Transaction Report
2.4 - Update Sample Analysis File (SAF)
2.5 - Build Periodic Summary and Violations
2.6 - Produce Analysis Results
2.7 - Update Violations File (VIF)
2.8 - Select from Violations File (VIF)
2.9 - Produce Sample Schedules
2.10 - Purge Sample Analysis File

3. WAQC Subsystem Overview

The WAQC contains programs to carry out the following functions:

- Data Entry and Updating
- Selection and Sorting
- Reporting
- Purging
- Summarizing
- Violation Identification
- Sample Scheduling

The main features of the Water Quality Compliance Subsystem are:

- Batch, sequential processing;
- Interaction with the other MSIS Subsystem;
- Flexible selection and reporting modules that allow the user to specify record selection and sort sequence, but within predetermined print formats;
- Identification of violations of sampling requirements and contaminanct levels.

Analysis result input transactions are entered via sample data input forms for bacteriological, turbidity, chemical, and radiological samples. Input transactions may also be used for creating, deleting, or updating files (Periodic Sample File, Sample Analysis File, Violations File, Laboratory Table).

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The three basic transactions in the sample data, file updates, and file deletions -- are discussed below:

a. Sample Data

The system is designed to accept three types of samples described below -- bacteriological, turbidity, and chemical and radiological samples.

1. Bacteriological Samples

Bacteriological samples may be reported by each PWS on a monthly summary form (Exhibit WAQC.108 and 402) or as a list of samples (Exhibit WAQC.107 and 401). The state may use the Bacteriological Reporting Requirements Flag on the inventory record to indicate the reporting mode for each PWS. If the flag is not set, it is assumed that the PWS is reporting on a list.

2. Turbidity Samples

A PWS may report turbidity samples on a summary form (Exhibit WAQC.108 and 407) or a list of individual samples (Exhibit WAQC.107 and 405). The state may use the Turbidity Reporting Requirements Flag on the inventory record to indicate the reporting mode for each PWS. If the flag is not set, it is assumed that the PWS is reporting on a list.

3. Chemical and Radiological Samples

Results of samples for chemical and radiological analysis must be reported individually (Exhibits (WAQC.106, 400). This form contains only the contaminants included in the National Interim Primary Drinking Water Regulations; states may add more contaminants to its individual forms if desired.

b. File Updates

Violations which are not automatically identified by the Water Quality Compliance Subsystem must be reported using the Violation Reporting Form for additions or updates to the Violations file.

c. Deletion

The Sample Analysis File (SAF) and Violations File (VIF) use code 99 for deletions. The Periodic Sample

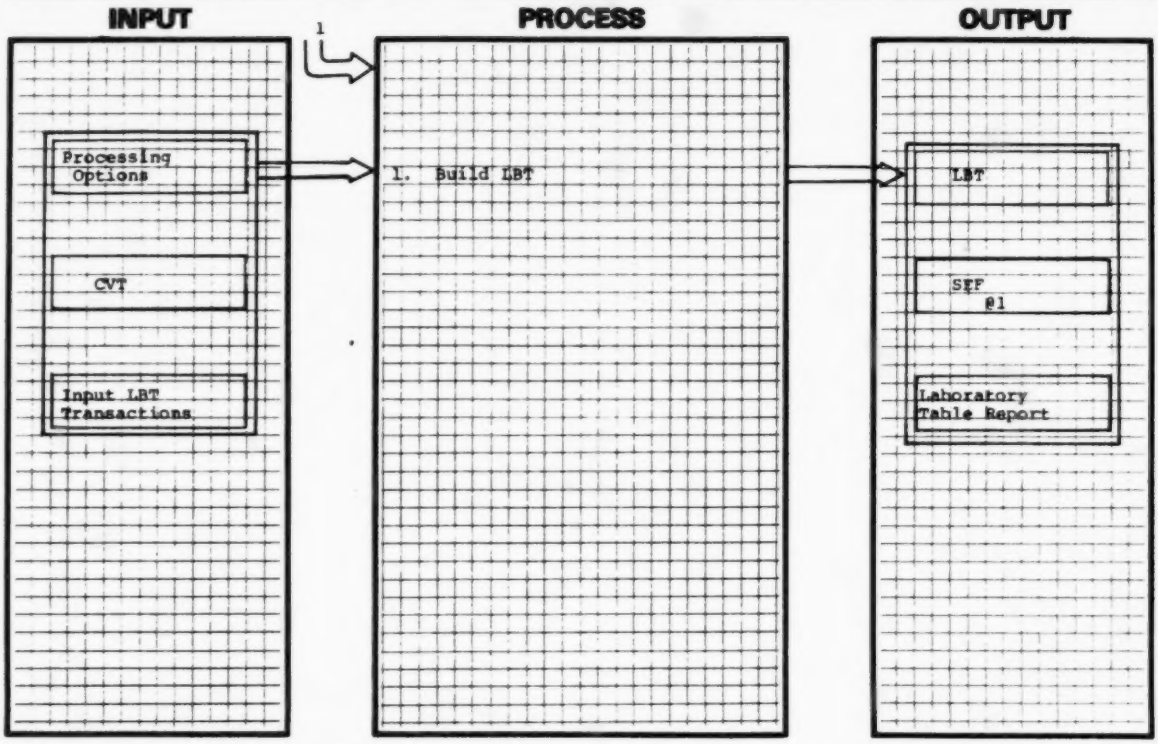
File (PSF) is an exception; it uses code 01 for deletion. This exception was permitted because the PSF does not allow updating. The only way an update can be accomplished is to first delete (code 01) and, second, add a corrected version.

All analysis result input transactions are edited and posted to the Periodic Sample File (PSF) which is used to collect and store data during the compliance cycle. Every reporting period, some of the data from the PSF will be summarized and posted to the Sample Analysis File (SAF).

The PWF, VEF and the Violations File (VIF) are matched to create a Deviations File and modified Public Water File (PWF). These two files constitute most of the annual reporting requirements.

MODEL STATE INFORMATION SYSTEM

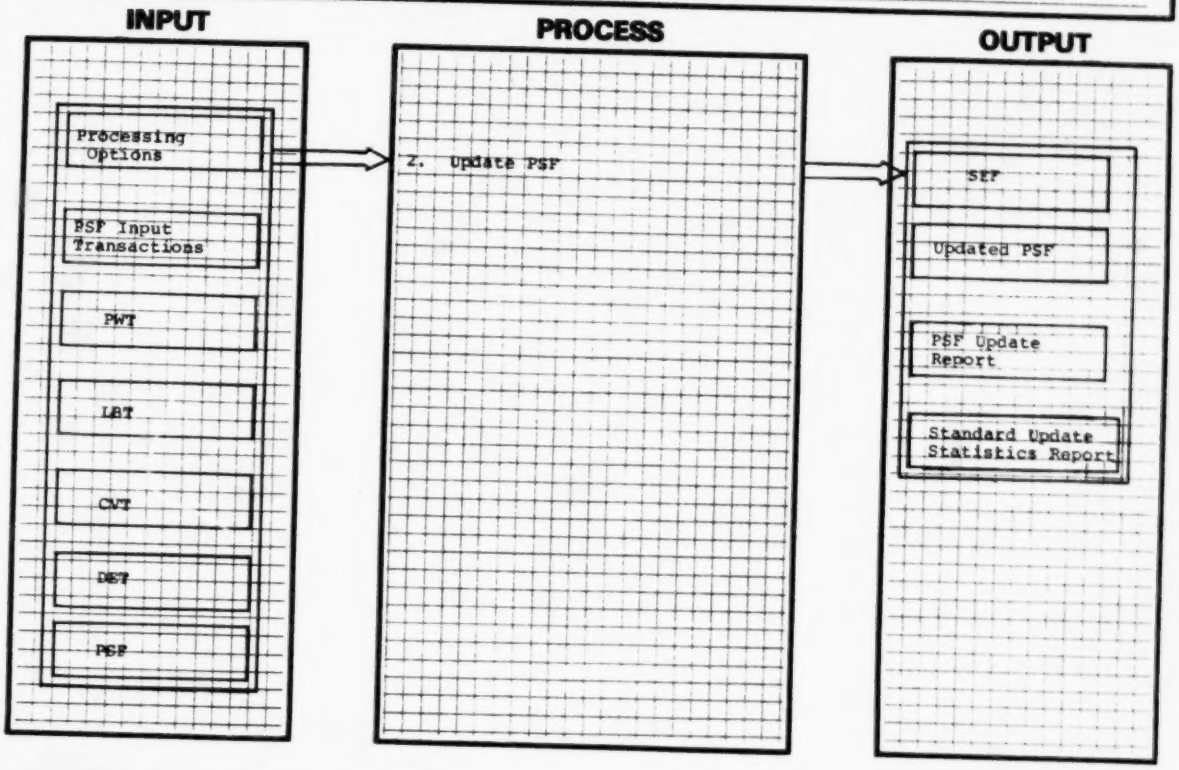
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10-28-76 **Page:** 1 of 10
Diagram No.: 2 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Laboratory Table (LBT) is built from Input LBT Transactions. Transactions are edited for syntax and against the Code Value Table (CVT) for valid analysis methods. Errors are written to the Standard Error File (SEF). The LBT is created only when all input transactions are error free. The LBT must be rebuilt in its entirety when changed. The LBT is a direct access file. After the LBT is built, the Laboratory Table Report is produced.	2.1	WAQC210	

MODEL STATE INFORMATION SYSTEM

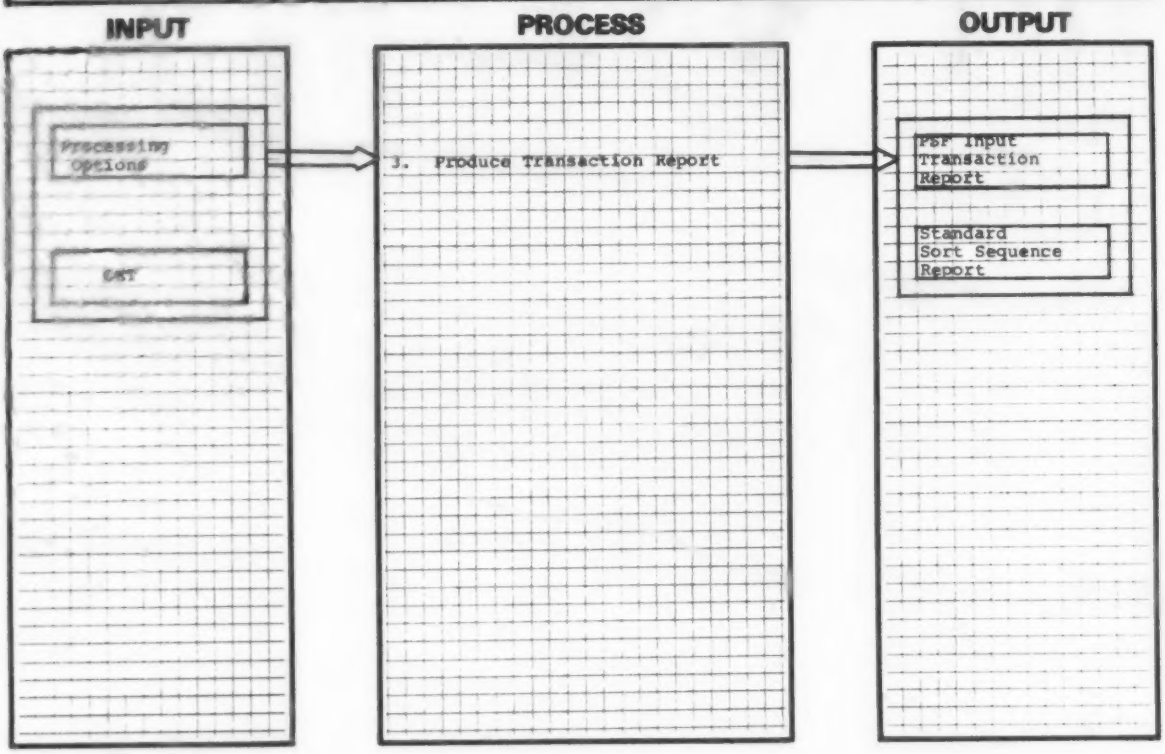
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10-28-76 **Page:** 2 **of** 10
Diagram No.: 2 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	The Periodic Sample File (PSF) is updated by either adding new sample analysis data (chemical, radiological, bacteriological, or turbidity input transactions) to the PSF or deleting sample analysis data from the PSF. Transactions are edited against the Public Water Table (PWT), the Laboratory Table (LBT), the Code Value Table (CVT) and the Data Element Table (DET). Transactions in error are written to the Standard Error File (SEF). The PSF Update Report and the Standard Update Statistics Report is also produced.	2.2	WAQC010	

MODEL STATE INFORMATION SYSTEM

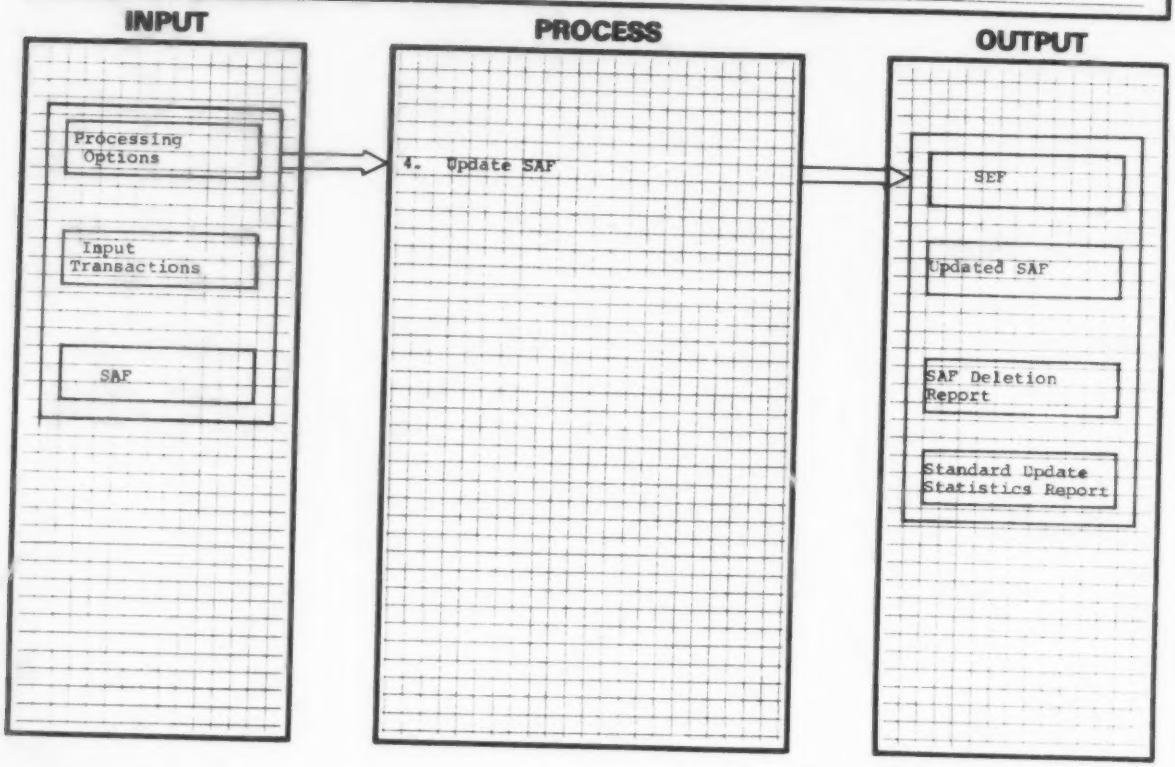
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10-28-76 **Page:** 3 **of** 10
Diagram No.: 2 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	A Periodic Sample File (PSF) Input Transaction File, passed from program WAQC010, is sorted by user defined sort parameters on the Processing Options records and the sorted file is used to produce the PSF Input Transaction Report. The Data Element Table (DET) is used to edit the Processing Options and to construct sort keys. The Standard Sort Sequence Report is also produced.	2.3	WAQC011	

MODEL STATE INFORMATION SYSTEM

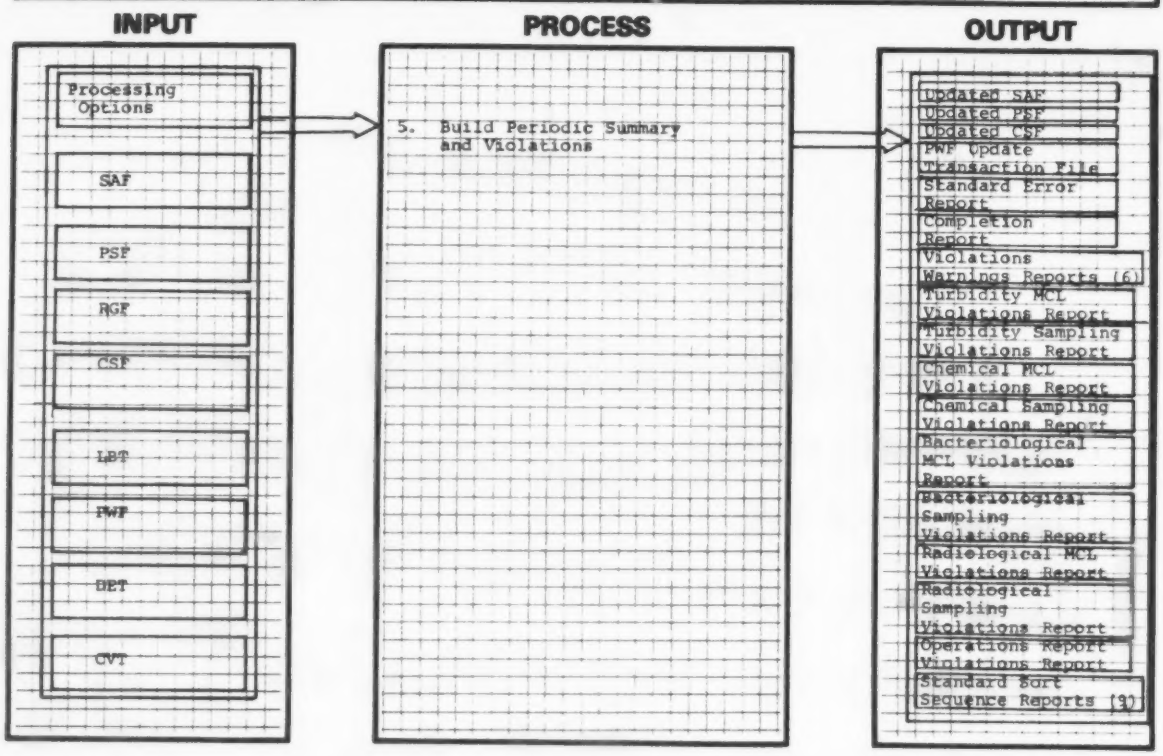
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10-28-76 **Page:** 4 **of** 10
Diagram No.: 2 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
4	The Sample Analysis File (SAF) is updated with delete input transactions only. The input transactions are edited for syntax and then applied to the file. Transactions in error are written to the Standard Error File (SEF). Deleted SAF Records are written on the SAF Deletion Report. The Standard Update Statistics Report is also produced.	2.4	WAQC020	

MODEL STATE INFORMATION SYSTEM

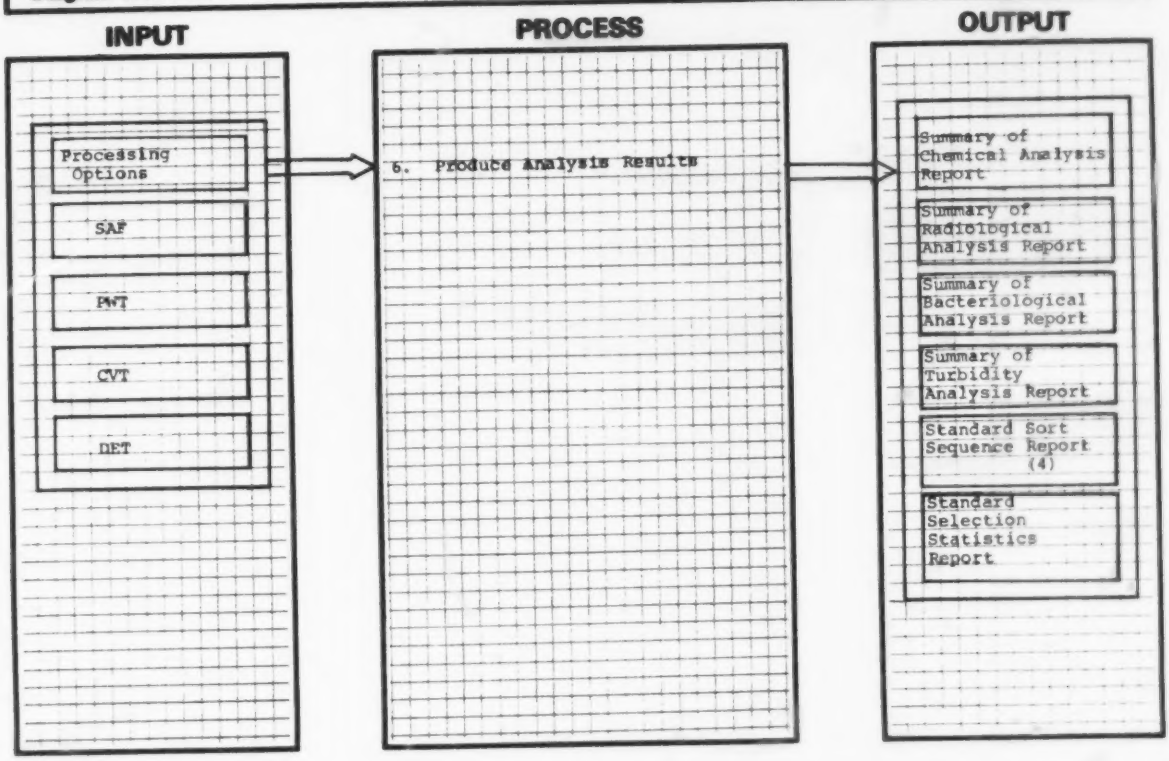
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10-28-76 **Page:** 5 of 10
Diagram No.: 2 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
5	Individual sample violations are determined as defined by both State and Federal Regulations on the Regulations File (RGF). Individual bacteriological and turbidity samples are summarized for the current compliance cycle. Summary violations are determined and individual bacteriological and turbidity samples are summarized and removed from the Periodic Sample File (PSF). Summary records are entered into the Sample Analysis File (SAF) as are individual Chemical and Radiological samples and all special samples. The Code Value Table (CVT), Laboratory Table (LBT), Public Water File (PWF), Compliance Status File (CSF), RGF, and the Data Element Table (DET) are all used in Compliance Processing. PWF Input Transactions for use by program PWSI010 are also generated. Twenty-six (26) reports are produced from this module including nine (9) Violations Reports, nine (9) Standard Sort Sequence Reports, six (6) Violations Warnings Reports, a Standard Error Report, and a Completion Report.	2.5	WAQC025 WAQC031 WAQC032 WAQC033 WAQC034 WAQC035 WAQC036 WAQC037 WAQC038 WAQC040 WAQC041 WAQC050 WAQC051 WAQC060 WAQC061 WAQC070 WAQC080 WAQC090	

MODEL STATE INFORMATION SYSTEM

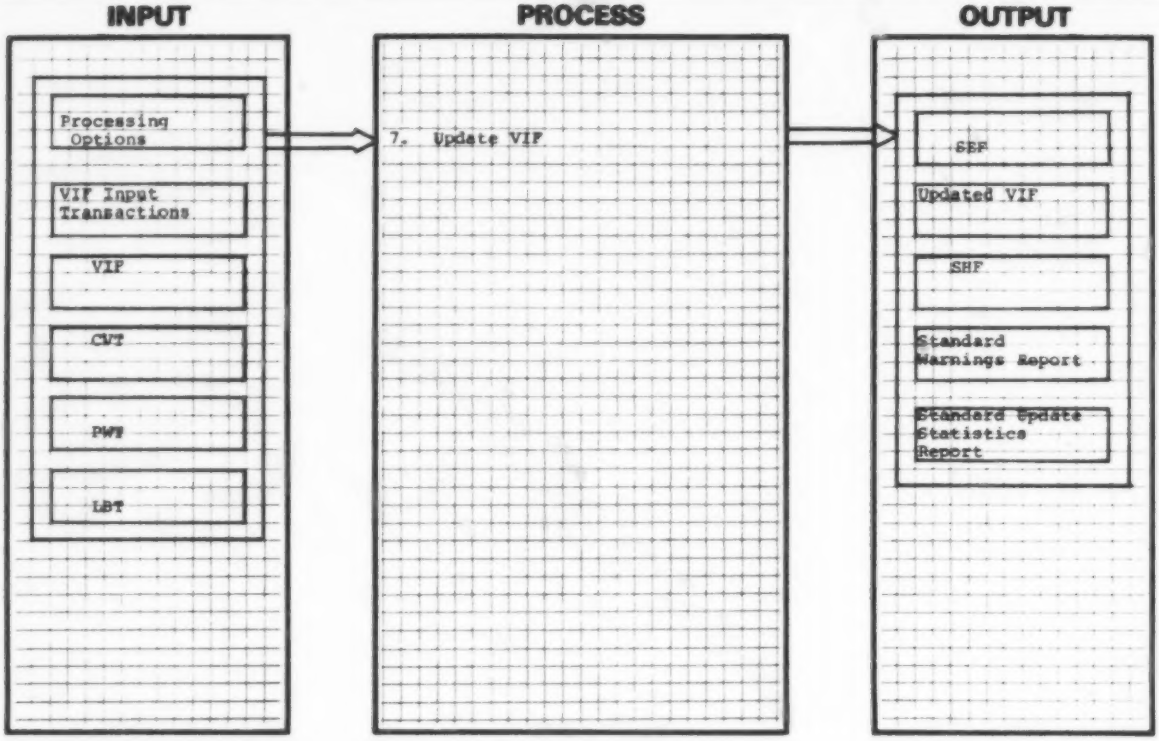
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10-28-76 **Page:** 6 **of** 10
Diagram No.: 2 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
6	The Sample Analysis File (SAF) is scanned for sample analysis records fitting selection criteria defined by the user. Appropriate records are selected and sorted according to user defined sort parameters. Summary reports are produced for contaminant groups, each accompanied by a Standard Sort Sequence Report. A Standard Selection Statistics Report is also produced following the selection process. The Public Water Table (PWT), Code Value Table (CVT), and Data Element Table (DET) are used in the selection, sorting, and report production processes.	2.6	WAQC100 WAQC110 WAQC111 WAQC112 WAQC113	

MODEL STATE INFORMATION SYSTEM

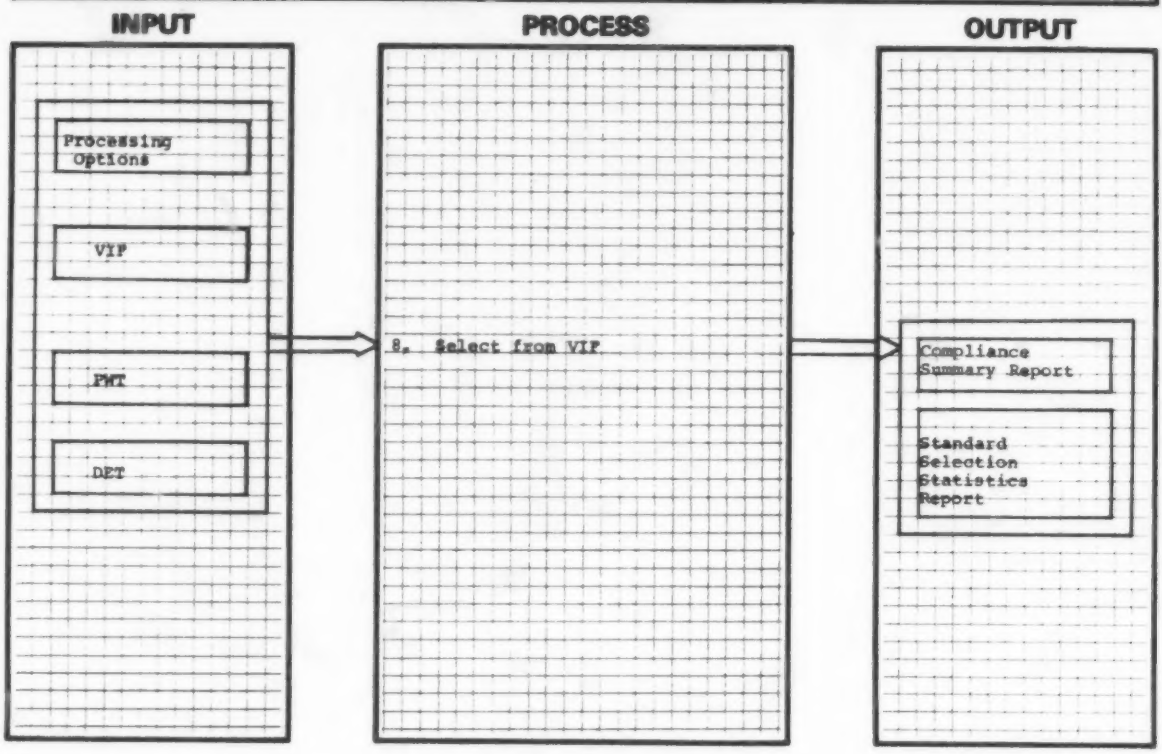
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10-28-76 **Page:** 7 **of** 10
Diagram No.: 2 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
7	The Violations File (VIF) is updated from input transactions generated either manually or automatically from program WAQC038. Transactions are edited and applied to the VIF for additions, updates, or deletions of records. Successful transactions cause Standard History File (SHF) records to be built. Unsuccessful transactions are written to the Standard Error File (SEF). The Code Value Table (CVT), Public Water Table (PWT), and Laboratory Table (LBT) are used to edit transactions and in building or changing VIF records. Missing EPA requested fields are identified on the Standard Warnings Report. The Standard Update Statistics Report is also produced.	2.7	WAQC120	

MODEL STATE INFORMATION SYSTEM

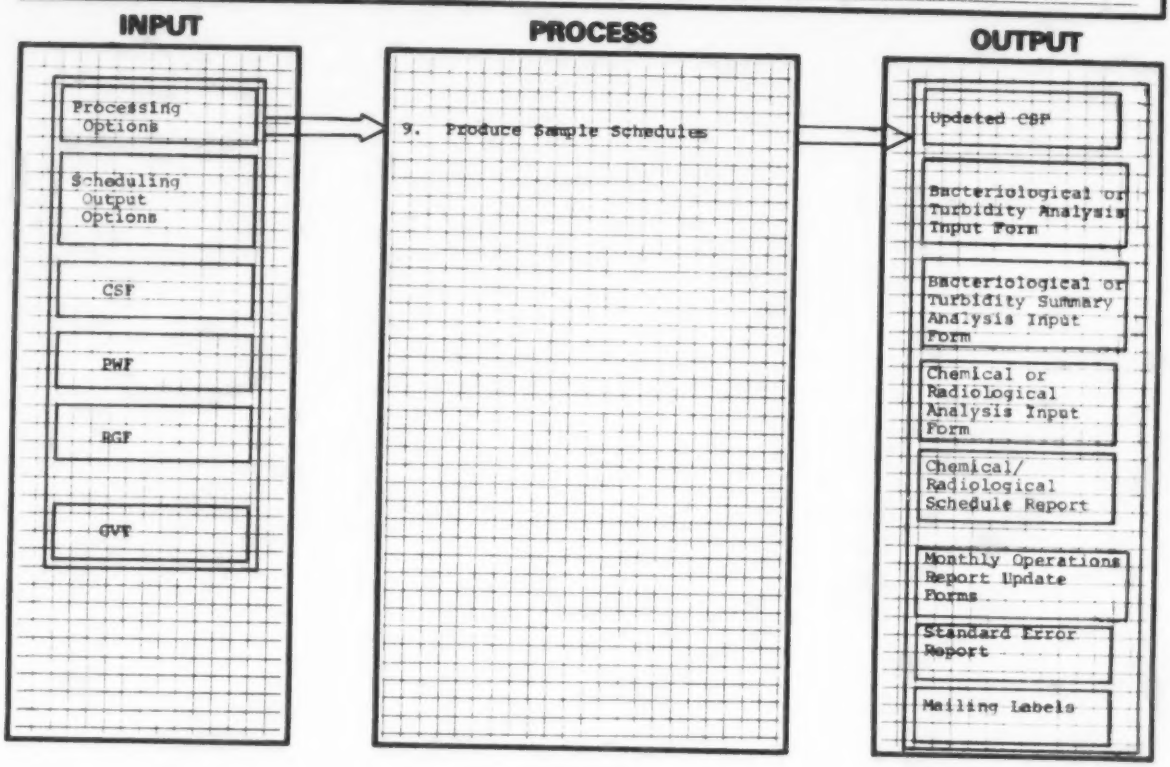
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10-28-76 **Page:** 8 **of** 10
Diagram No.: 2 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
8	The Violations File (VIF) is scanned for Violation records fitting selection criteria defined by the user. Appropriate records are selected and used to produce the Compliance Summary Report. The Public Water Table (PWT) and Data Element Table (DET) are used in the selection and report production processes. A Standard Selection Statistics Report is also produced.	2.8	WAQC125	

MODEL STATE INFORMATION SYSTEM

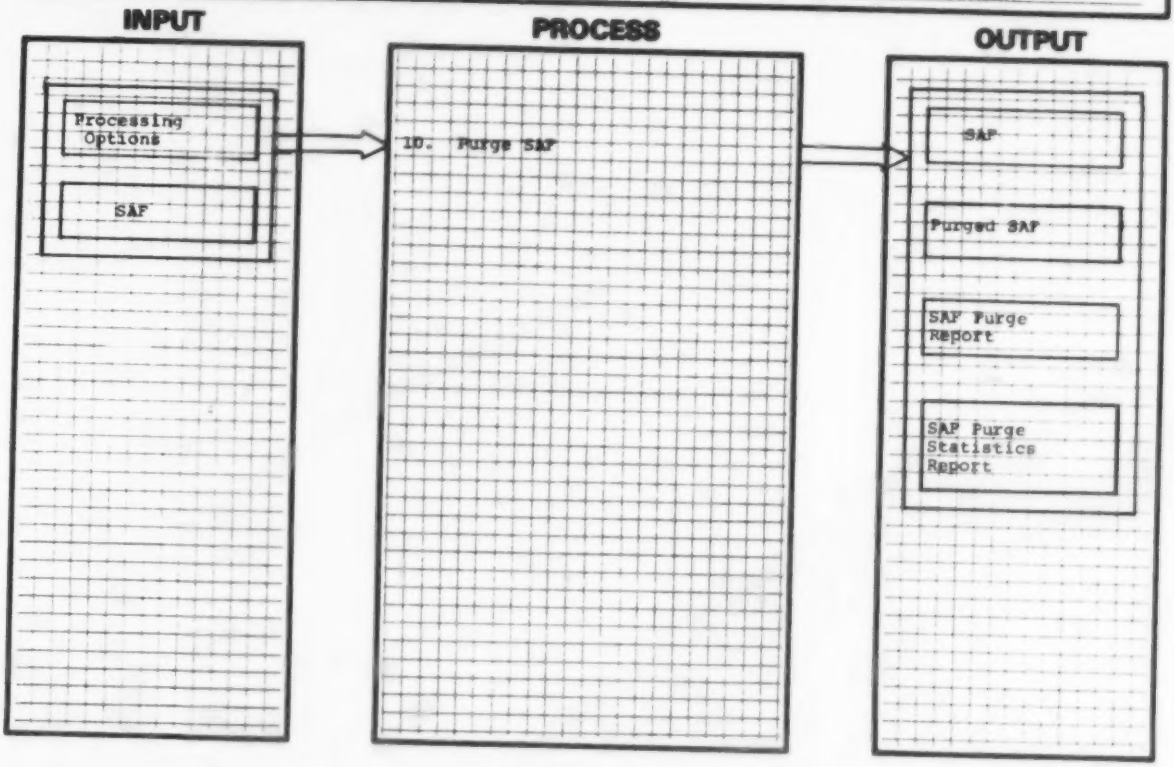
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10-28-76 **Page:** 9 **of** 10
Diagram No.: 2 **Description:** Subsystem Overview



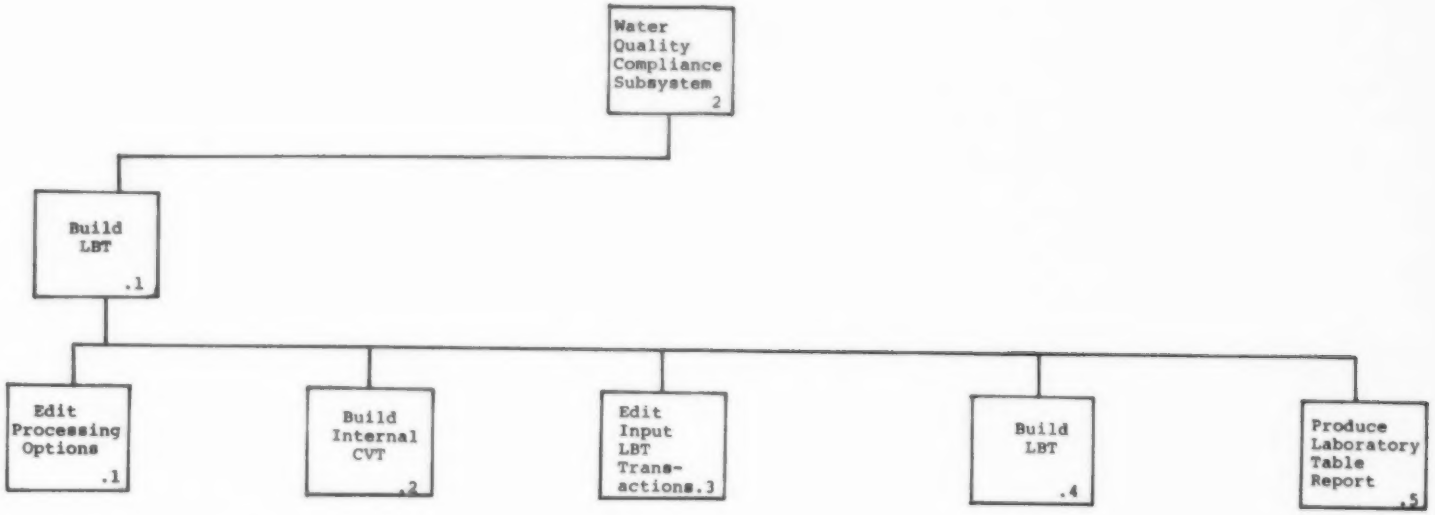
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
9	Sample Schedules (turnaround documents), Monthly Operations Report Update Forms, and Mailing Labels may be produced for a Public Water System (PWS) at the discretion of the State. Scheduling Output Options, which identify PWS's which may be scheduled, are edited and used with Public Water File (PWF) information, Compliance Status File (CSF) dates, and Regulations File (RGF) information to determine the kind and quantity of input (turnaround) forms to produce. PWF information is also used to produce mailing labels and Monthly Operations Report Update Forms. A Chemical/Radiological Schedule Report and a Standard Error Report is also produced. After a PWS has been scheduled, CSF schedule dates are updated. The Code Value Table (CVT) is used in report production.	2.9	WAQC130 WAQC140 WAQC150 WAQC170 WAQC180 WAQC200	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 10-28-76 Page: 10 of 10
Diagram No.: 2 Description: Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
10	The Sample Analysis File (SAF) is purged according to criteria on the Processing Options. The Purged SAF, containing all records removed from the SAF, is used to produce the SAF Purge Report. The SAF Purge Statistics Report is also produced.	2.10	WAQC220	


Water Quality Compliance Subsystem 2
Build LBT .1
Edit Processing Options .1
Build Internal CVT .2
Edit Input LBT Trans-actions.3
Build LBT .4
Produce Laboratory Table Report .5

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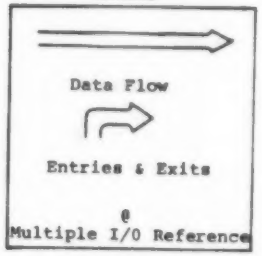
2.1.1 Edit Processing Options
2.1.2 Build Internal Code Value Table (CVT)
2.1.3 Edit Input LBT Transactions
2.1.4 Build Laboratory Table (LBT)
2.1.5 Produce Laboratory Table Report



NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC210
DATE: 10/19/76

I. OBJECTIVES:

This program creates the Laboratory Table and produces the Laboratory Table Report.

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1. Laboratory Transactions	LBI-CARD1-RECORD	WAQC.101	WAQC.201
	LBI-CARD2-RECORD	WAQC.102	WAQC.202
2. Code Value Table	CVT-RECORD	MSIS.103	MSIS.206

B. PROCESSING OPTIONS RECORD:

NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1. Processing Options	LBI-PROC-RECORD	WAQC.100	WAQC.200

III. OUTPUTS:

A. RECORD LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Laboratory Table	LBT-RECORD	WAQC.250
	LBT-HDR-RECORD	WAQC.256
2. Standard Error File	SEF-RECORD	MSIS.207
	MSI-PROC-SEF-RECORD	MSIS.208

B. REPORT LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Laboratory Table Report		WAQC.300

C. TURNAROUND DOCUMENTS

Not Applicable

IV. FUNCTIONS:

1. The Processing Options contain the date when this program was requested. An invalid date will stop the job from being processed.

2. Build the internal Code Value Table (CVT). This table will be used in editing input transactions.

3. The input transactions are edited for errors. Any errors will cause the record to be rejected and prevent the building of the Laboratory Table (LBT).

4. The LBT is built when all transactions are acceptable.

5. The Laboratory Table Report is produced which is a detail report of every record on the LBT.

V. ASSOCIATED DOCUMENTS:

A. DATA ENTRY AND KEYPUNCH INSTRUCTIONS:

1. Processing Options
2. Laboratory Table (LBT)

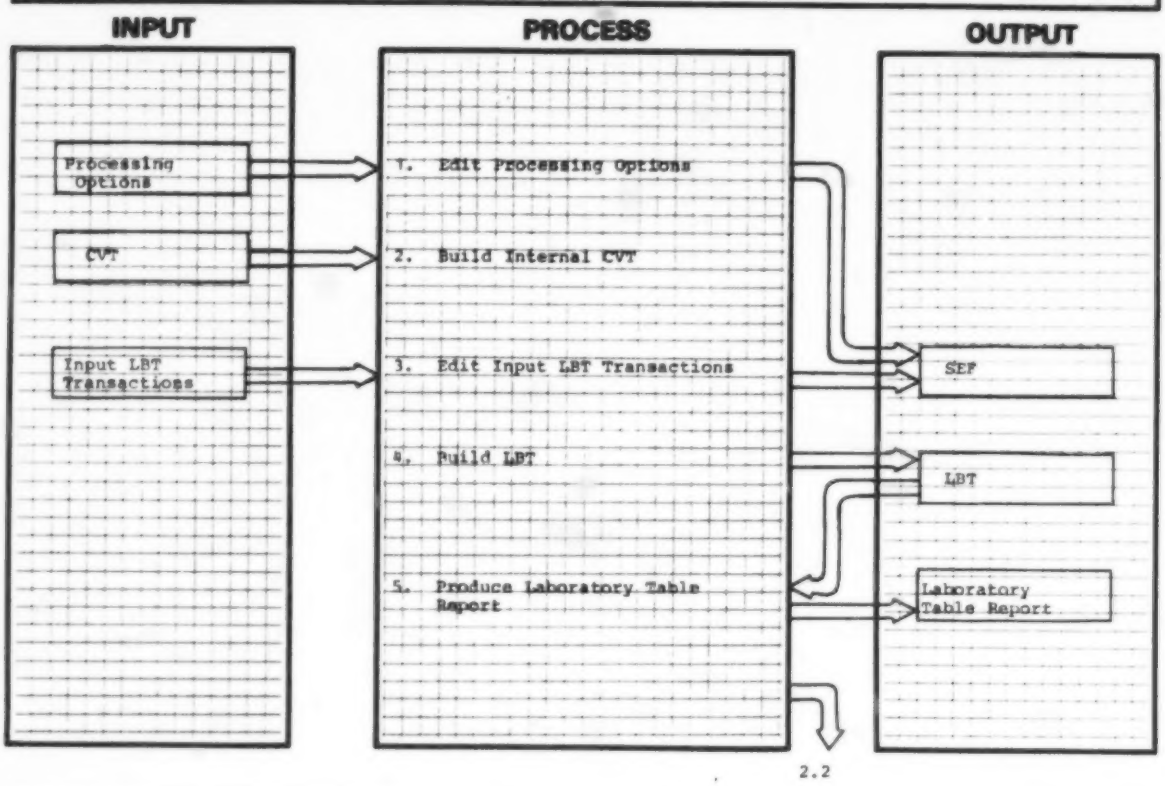
B. DATA ELEMENT DESCRIPTIONS:

1. Laboratory Table (LBT)

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 10/28/76 **Page:** 1 of 1

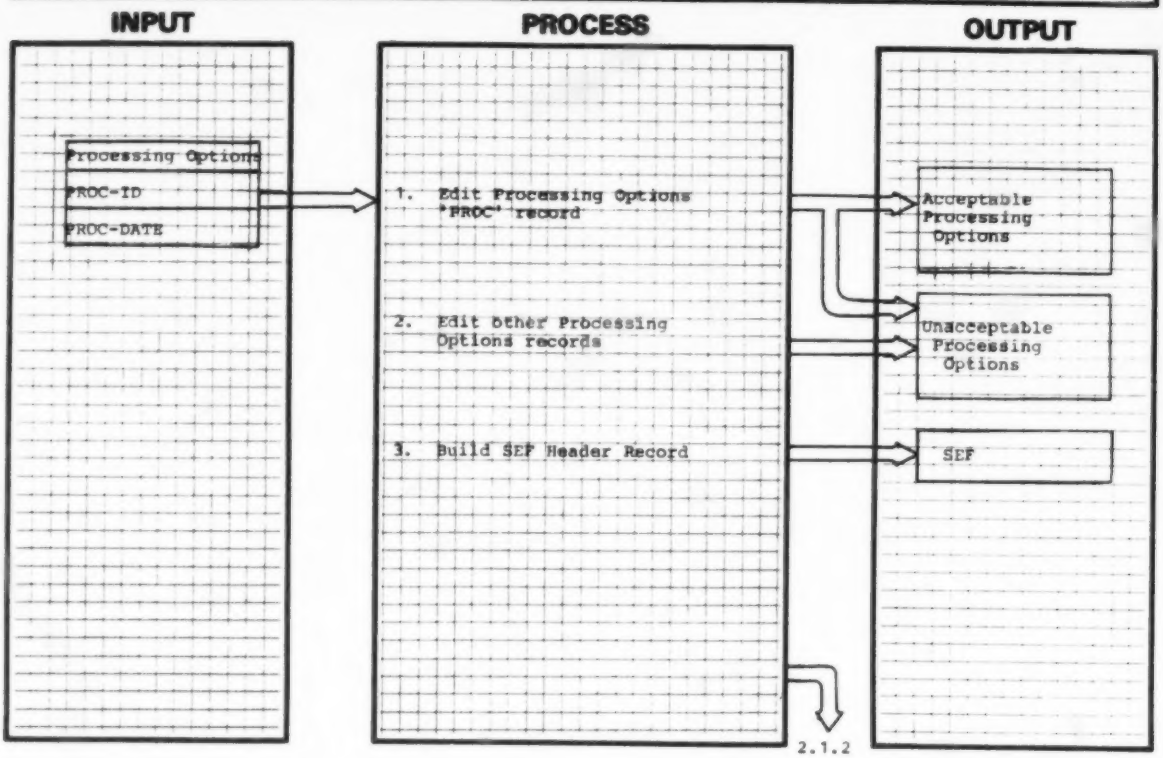
Diagram No.: 2.1 **Description:** Build LBT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Processing Options are edited and the Standard Error File (SEF) header record is built.	2.1.1	WAQC210	
2	An Internal Code Value Table (CVT) is built from the Code Value Table (CVT).	2.1.2	WAQC210	
3	Input transactions are edited for both syntax and content. The analysis methods for each transaction are edited against the internal CVT. Any transactions in error are written to the Standard Error File (SEF).	2.1.3	WAQC210	
4	The Laboratory Table (LBT) is built if, and only if, no errors are encountered during the edit of all input transactions.	2.1.4	WAQC210	
5	The Laboratory Table Report is produced as a direct listing of the LBT.	2.1.5	WAQC210	
	NOTE: Input transactions are sorted by LAB-ID, Card Code, and Contaminant Group Code before being edited. The edit criteria is described in the Data Element Dictionary (DED). Error Codes are located in the DED.			

MODEL STATE INFORMATION SYSTEM

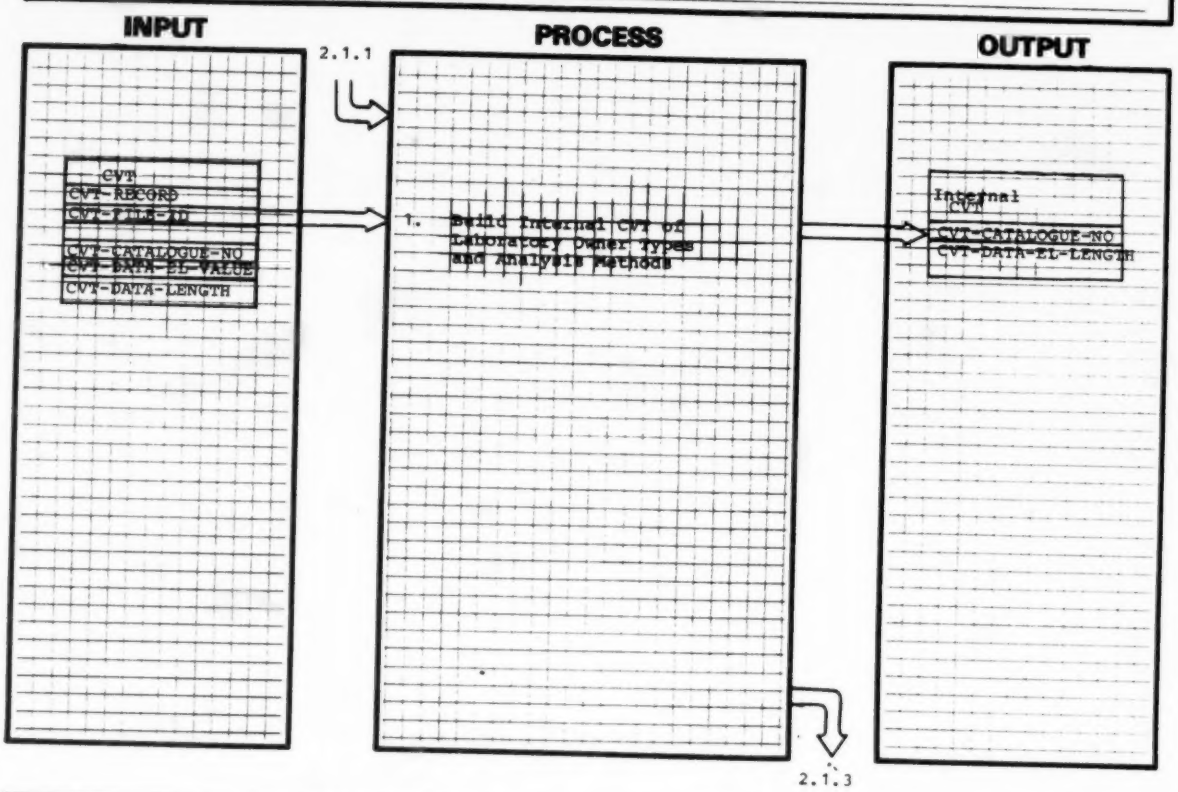
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 10/28/76 **Page:** 1 of 1
Diagram No.: 2.1.1 **Description:** Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Record with 'PROC' in positions 1-4 of the record as follows: a. Date in position 5-10 must be valid. If it is not terminate the job. b. Optional Error File option in position 11 must be 'Y' (yes) or 'N' (no). If it is not default to 'N'. c. Position 12 is not used in this program, but an 'N' must be passed to the Standard Error File (SEF) in step 3. If no 'PROC' record exists or more than one 'PROC' record is found, the job is terminated. If the job is to be terminated the following error message is produced on the Laboratory Table Report. Two lines of asterisks (*) are printed followed by one of the following: a. "*Job Terminated - Invalid or Missing Processing Option*." b. "*Job Terminated - Invalid Date on PROC record*."		WAQC210	100 200
2	Edit all other Processing Option records. All of these records are in error and processing should be terminated.		WAQC210	MSIS. 208
3	The Processing Options record for the SEF is always built in this step. 'LOW VALUES' are placed in positions 1-4. Date is placed in positions 5-10, and the options or default options are in 11 and 12. If the PROC record is missing or if processing of the job is terminated due to errors and the Standard Error Processing module should not be run, then this record is built with 'LOW VALUES' in positions 1-4 and the rest of the record blank.		WAQC210	100 MSIS. 208

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 10/28/76 **Page:** 1 of 1
Diagram No.: 2.1.2 **Description:** Build Internal Code Value Table

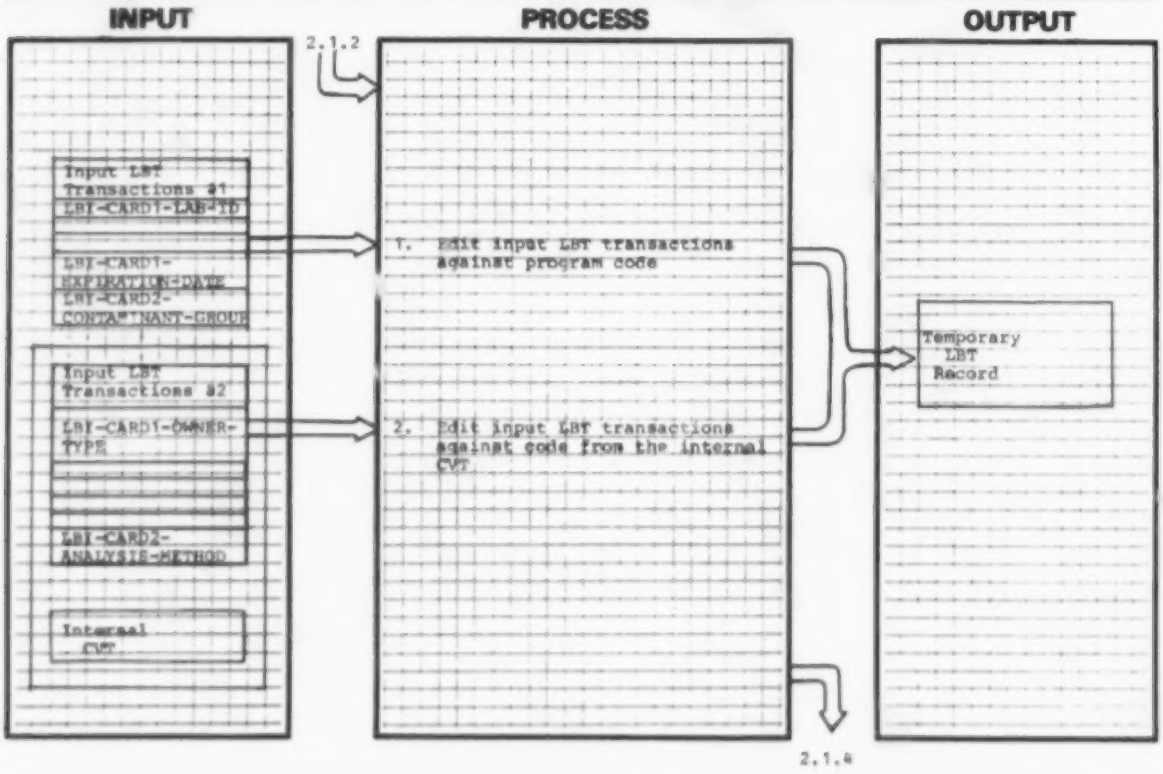


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Code Value Table (CVT) of data element values. Appropriate records are stored internally to be used for editing laboratory owner types and analysis methods.		WAQC210	MSIS. 206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 10/28/76 **Page:** 1 **of** 1

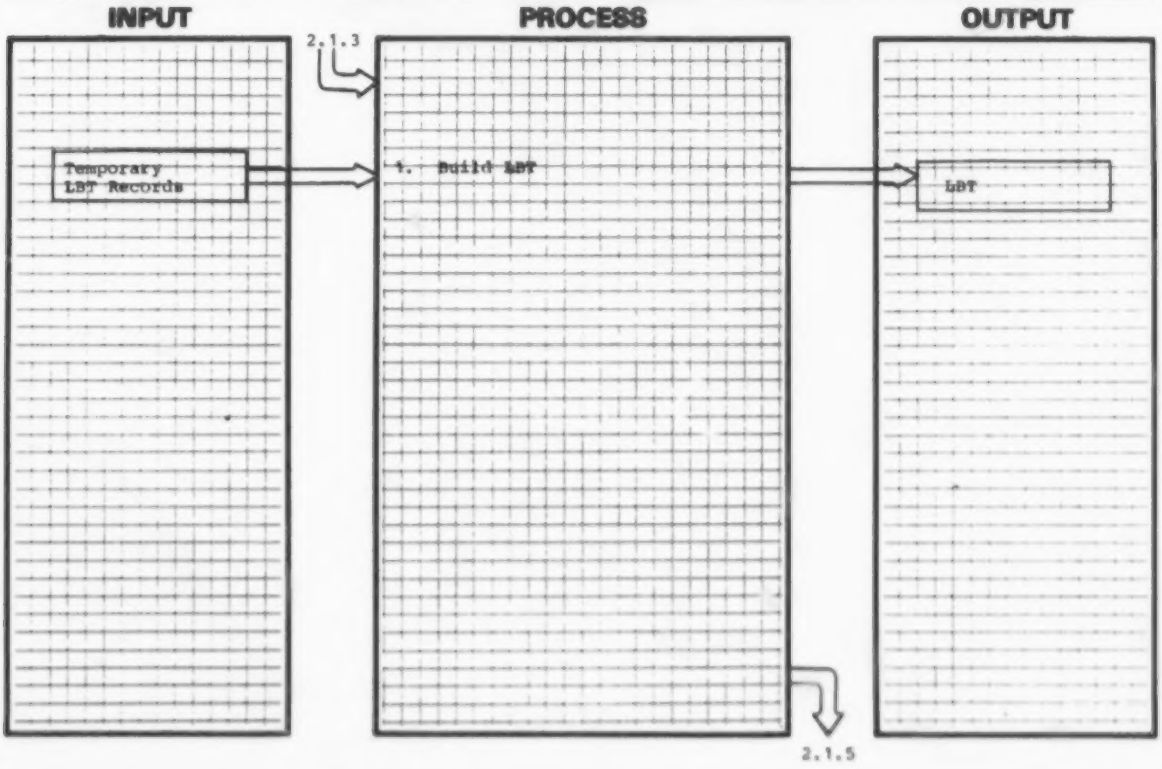
Diagram No.: 2.1.3 **Description:** Edit Input Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the input Laboratory Table (LBT) transactions against hard coded edit criteria within the program as defined by the Data Element Dictionary (DED). If any 'L1' or 'L2' cards are duplicate or missing, all cards with that same Lab-ID are rejected. Any errors encountered are posted to the SEF. Whether or not the input transaction is in error the record is used as input for step 3.			101 102 201 202 250 DED MSIS. 207
2	Edit input LBT transactions against the Internal Code Value Table (CVT) created in HIPO 2.1.2. The same procedures for missing or duplicate records used in Step 2 are followed here. At least one Analysis Record must exist for each Contaminant Group and at least one Contaminant Group for each lab record else the whole set of LBT records for that Lab-ID is rejected. NOTE: Input Transactions are sorted by LAB-ID, CARD-CODE, and CONTAMINANT-GROUP before being edited. NOTE: Edit criteria is located in the Data Element Dictionary (DED).			101 102 201 202 250 DED MSIS. 207

MODEL STATE INFORMATION SYSTEM

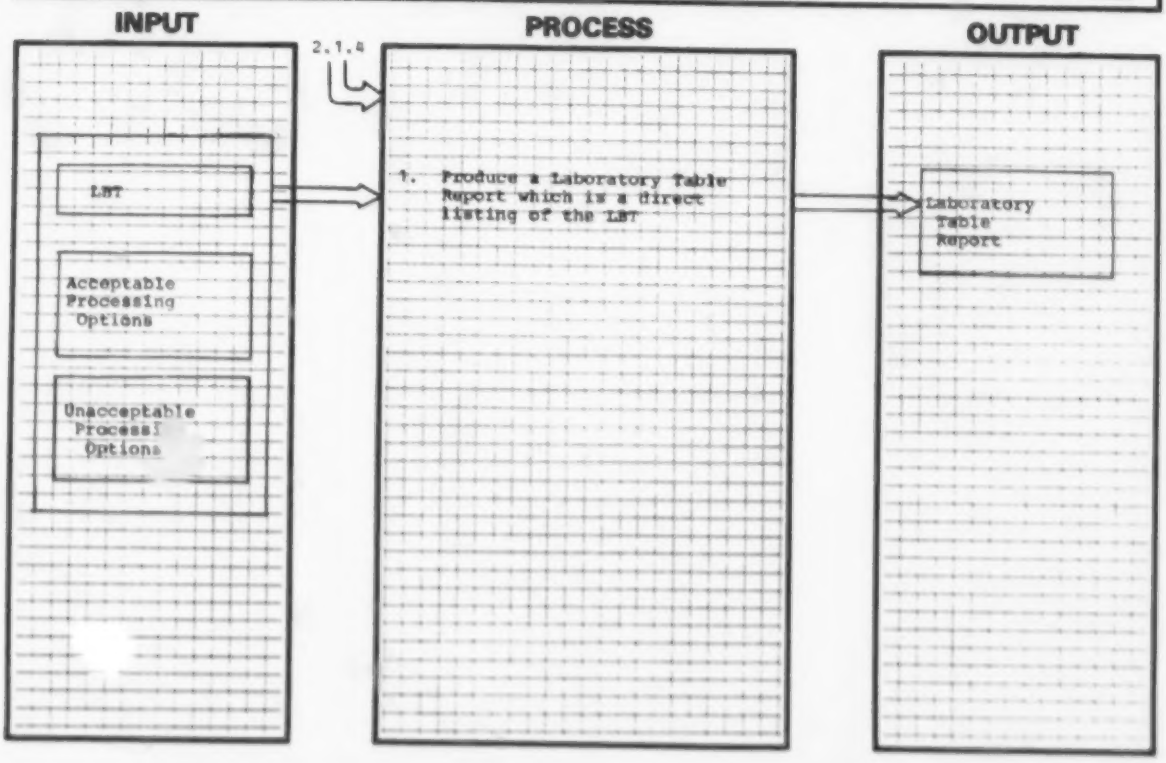
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 10/28/76 **Page:** 1 of 1
Diagram No.: 2.1.4 **Description:** Build LBT



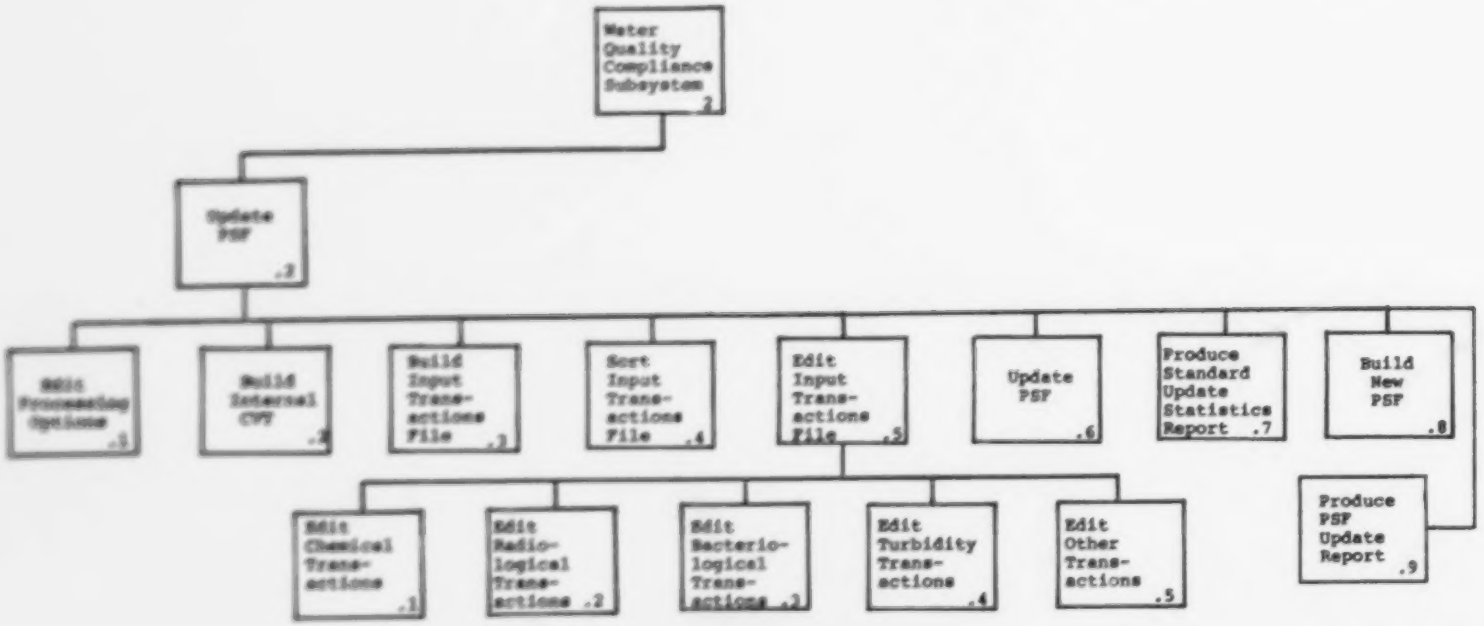
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Laboratory Table (LBT) directly from the records passed out of the edit from 2.1.3 only if no edit errors occurred. If errors were detected during the edit, this step is skipped. NOTE: The temporary LBT and the new LBT built here have the same record format.		MAQC210	250 256

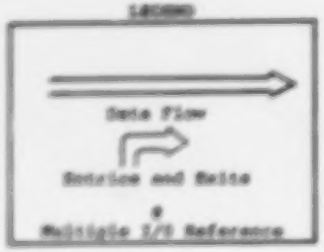
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 10/28/76 **Page:** 1 of 1
Diagram No.: 2.1.5 **Description:** Produce Laboratory Table Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce a direct, record for record, unsorted listing of the Laboratory Table (LBT) with a standard heading. If any Processing Options are in error, error messages can be produ[illegible] instead of the normal report. NOTE: [illegible] "unsorted," it is meant that the user does not have the ability to sort the output report in any other sequence than the normal output, specifically, Laboratory-ID and Contaminant Group Code.		WAQC210	250 300 256


Water Quality Compliance Subsystem .2
Update PSF .3
Edit Processing Options .1
Build External CVT .2
Build Input Transactions File .3
Sort Input Transactions File .4
Edit Input Transactions File .5
Update PSF .6
Produce Standard Update Statistics Report .7
Build New PSF .8
Produce PSF Update Report .9
Edit Chemical Transactions .1
Edit Radiological Transactions .2
Edit Bacteriological Transactions .3
Edit Turbidity Transactions .4
Edit Other Transactions .5



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2.2.5.2 Edit Radiological Transactions
2.2.5.3 Edit Bacteriological Transactions
2.2.5.4 Edit Turbidity Transactions
2.2.5.5 Edit Other Transactions
2.2.6 Update Periodic Sample File (PSF)
2.2.7 Produce Standard Update Statistics Report
2.2.8 Build New Periodic Sample File (PSF)
2.2.9 Produce Periodic Sample File (PSF) Update Report

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC010
DATE: November 18, 1976

I. OBJECTIVE:

The objective of this program is to edit the sample and deletion transaction data and to update the Periodic Sample File (PSF) accordingly.

The PSF contains the original sample data records to be used later in determining compliances.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sample Deletion Transactions	PSFI-DELT-RECORD	WAQC.105	WAQC.205
2.	Chemical or Radiological Analysis Input Transactions	PSFI-DETL-RECORD	WAQC.106 WAQC.400	WAQC.206
3.	Bacteriological or Turbidity Analysis Input Transactions	PSFI-DETL-RECORD	WAQC.107 WAQC.401	WAQC.206
4.	Bacteriological or Turbidity Summary Analysis Input Transactio	PSFI-DETL-RECORD	WAQC.108 WAQC.402	WAQC.207
5.	Code Value Table	CVT-RECORD		MSIS.206
6.	Laboratory Table	LBT-RECORD LBT-HDR-RECORD		WAQC.250 WAQC.256
7.	Public Water Table	PWT-RECORD PWT-HEADER-RECORD		PWSI.201 PWSI.234
8.	Periodic Sample File	PSF-RECORD PSF-HEADER-RECORD		WAQC.252 WAQC.251

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options	PSFI-PROC-RECORD	WAOC.103	WAOC.203

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Periodic Sample File	PSF-RECORD	WAOC.252
		PSF-HEADER-RECORD	WAOC.251
2.	Standard Error File	SEF-RECORD	MSIS.207
		MSI-PROC-SEF-RECORD	MSIS.208
3.	PSF Transaction File	PSFI-PSUM-RECORD	WAOC.208

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Update Statistics Report	MSIS.300
		MSIS.309
2.	PSF Update Report	WAOC.301

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Build an internal Code Value Table (CVT) for use in editing the input transactions.

2. Edit the Processing Options for errors. Edit the 'PROC' record for date errors and for invalid Standard Error Processing Options. Any errors will produce messages on the Standard Update Statistics Report and will stop the job.

3. Build a transaction file of input records by reformatting the various input records into the same format.

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options	PSFI-PROC-RECORD	WAOC.103	WAOC.203

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Periodic Sample File	PSF-RECORD	WAOC.252
		PSF-HEADER-RECORD	WAOC.251
2.	Standard Error File	SEF-RECORD	MSIS.207
		MSI-PROC-SEF-RECORD	MSIS.208
3.	PSF Transaction File	PSFI-PSUM-RECORD	WAOC.208

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Update Statistics Report	MSIS.300 MSIS.309
2.	PSF Update Report	WAOC.301

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Build an internal Code Value Table (CVT) for use in editing the input transactions.

2. Edit the Processing Options for errors. Edit the 'PROC' record for date errors and for invalid Standard Error Processing Options. Any errors will produce messages on the Standard Update Statistics Report and will stop the job.

3. Build a transaction file of input records by reformatting the various input records into the same format.

4. Sort the transaction file created in Step 3 into the same sequence as the Periodic Sample File (PSF) which is Sample Time within Sample Date within Sample Type within Location Code within Contaminant ID within PWS ID.

5. Edit the sorted transactions for errors. All errors will be posted to the Standard Error File (SEF) but do not stop the job.

6. Update the PSF by deleting existing records and adding new records. The new PSF records are written to a work file to be saved until the first record of the new PSF, continuing the last sample key, is written to the new PSF file. A file of transaction records to be passed to WAQC011 is also built. In addition, the Standard Update Statistics Report is produced.

7. The new PSF is built by copying the work file of new PSF records created in Step 6 over to the new PSF file.

8. Produce the PSF Update Report showing all records deleted from and added to the PSF in this run.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

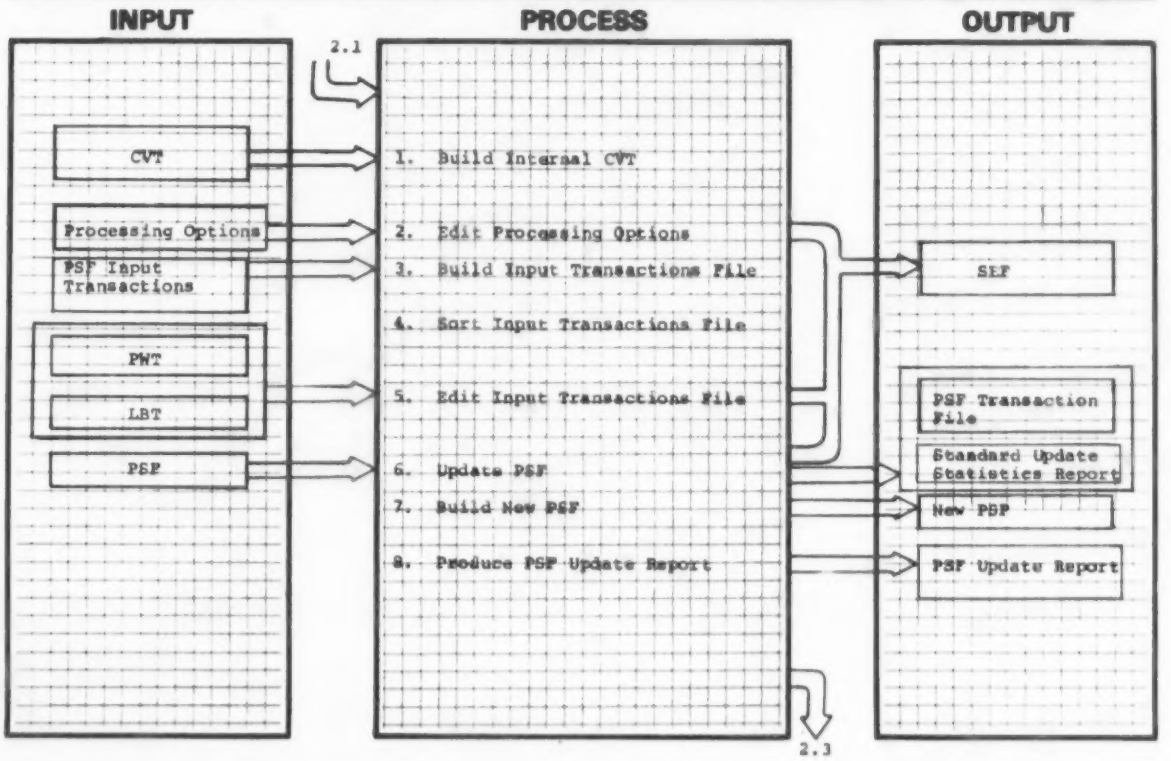
1. Processing Options
2. Sample Deletion Transactions
3. Chemical or Radiological Analysis Input Transactions
4. Bacteriological or Turbidity Analysis Input Transactions
5. Bacteriological or Turbidity Summary Analysis Input Transactions

B. Data Element Descriptions:

1. Periodic Sample File (PSF)

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 2
Diagram No.: 2.2 **Description:** Update the Periodic Sample File (PSF)

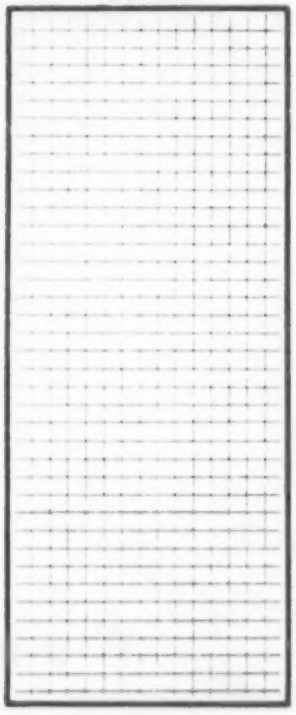


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Code Value Table (CVT) from the CVT by selecting appropriate records and storing them internally.	2.2.1	WAQC010	
2	Edit the 'PROC' Processing Options and build the first record of the Standard Error File (SEF). If any Processing Option is in error, program execution is terminated.	2.2.2	WAQC010	
3	An Input Transaction File is built from the Periodic Sample File (PSP) Input Transactions and is formatted in such a way as to facilitate sorting. No editing is performed in building this temporary file.	2.2.3	WAQC010	
4	Sort the Input Transaction File built in Step 3 in the same sequence as the PSF.	2.2.4	WAQC010	
5	Input transactions are edited in two ways. If a transaction specifies a deletion, it is only edited for syntax errors in PWS ID and Contaminant ID. For a new sample transaction, the internal CVT, Laboratory Table (LBT) and the Public Water Table (PWT) are searched and appropriate data elements are matched against the transaction file for validity. Any transaction in error causes two records to be built: one is reformatted to the original input transaction format and posted to the SEF; the other is flagged with an asterisk (*) and then is posted to the PSF transaction file in Step 6.	2.2.5	WAQC010	
6	If the transaction edited in Step 5 is error free, that transaction is used to update the PSF. If a transaction specifies a deletion, a check is made for whether the record exists in the PSF. Those records not being deleted are copied directly to the Updated PSF. New samples added to the PSF are assigned	2.2.6	WAQC010	

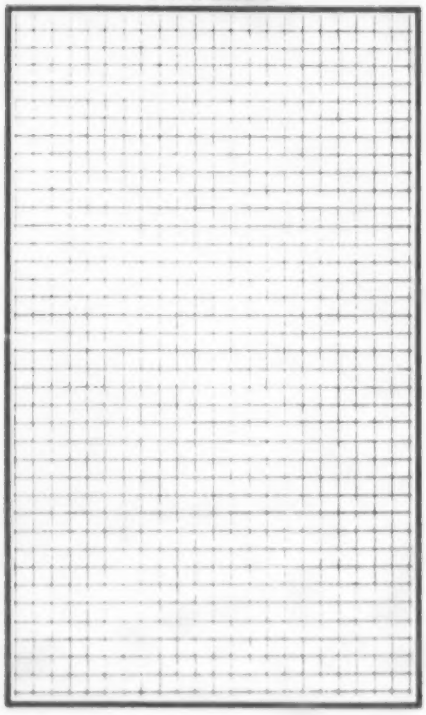
MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 2 of 2
Diagram No.: 2.2 **Description:** Update the Periodic Sample File (PSF)

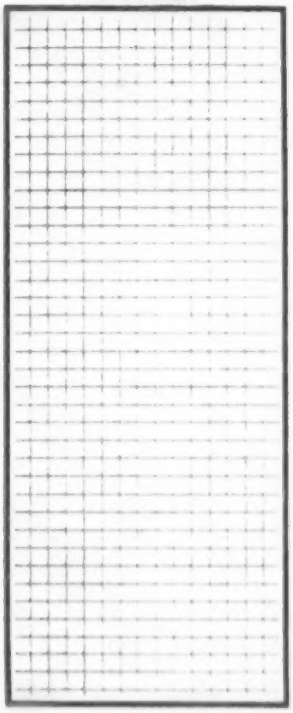
INPUT



PROCESS



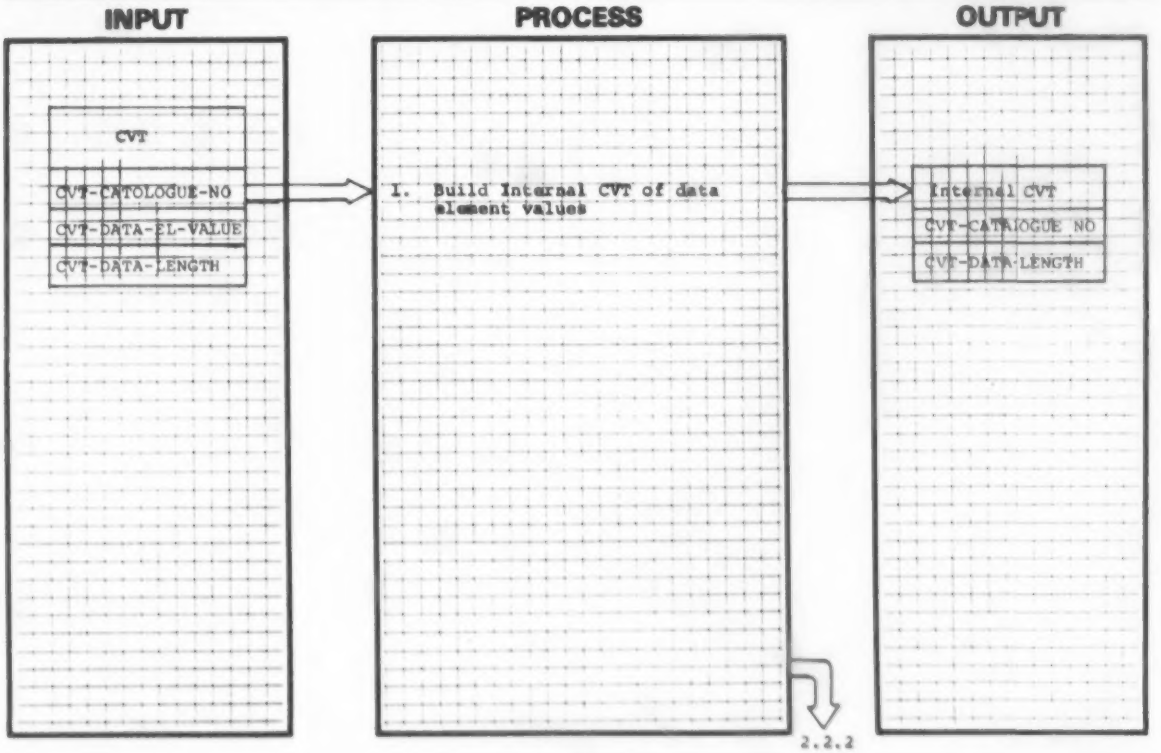
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	a sample key and copied to the PSF. Deletion transactions for which a PSF record does not exist, or new sample transactions for which a record already exists on the PSF are in error and are processed in the same manner as Step 5. All transactions are posted to the PSF transaction file to be passed to WAQC011 for production of the PSF Transaction Report. All deletion and addition transactions are copied to a work file to be passed to Step 9. All error free add transactions and all records to be copied from the old PSF into the new PSF are written to another work file to be passed to Step 8. A record indicating the processing date and latest sample key sequence number is written as the first record of the new PSF.			
7	The Standard Update Statistics Report is produced.	2.2.7	WAQC013	
8	A work file passed from Step 6 is copied to the new PSF, following the first record on the PSF, which was written in Step 6.	2.2.8	WAQC010	
9	The PSF Update Report is produced from a work file passed from Step 6, indicating all deletions from and additions to the PSF. Note: The PSF is in sequence by sample time within sample date, within sample type, within sample ID code, within contaminant ID, within Public Water System ID. Note: Error codes are located in the Data Element Dictionary (DED).	2.2.9	WAQC010	

MODEL STATE INFORMATION SYSTEM

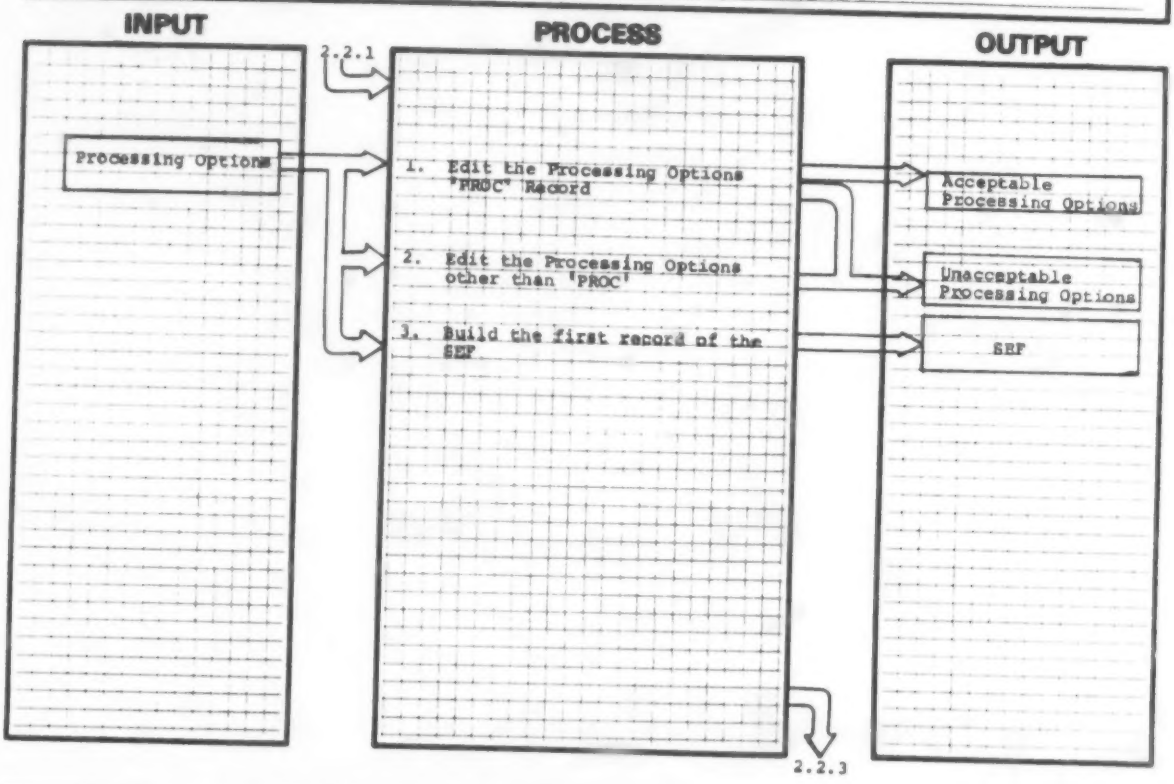
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.1 **Description:** Build Internal CVT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGAM	OTHER
1	Build an internal Code Value Table (CVT) of data element values. Appropriate records are stored in an internal CVT to be used as edit criteria for P&P input transactions.		WAQC10	MSIS. 206 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 12/17/76 Page: 1 of 1
Diagram No.: 2.2.2 Description: Edit Processing Options

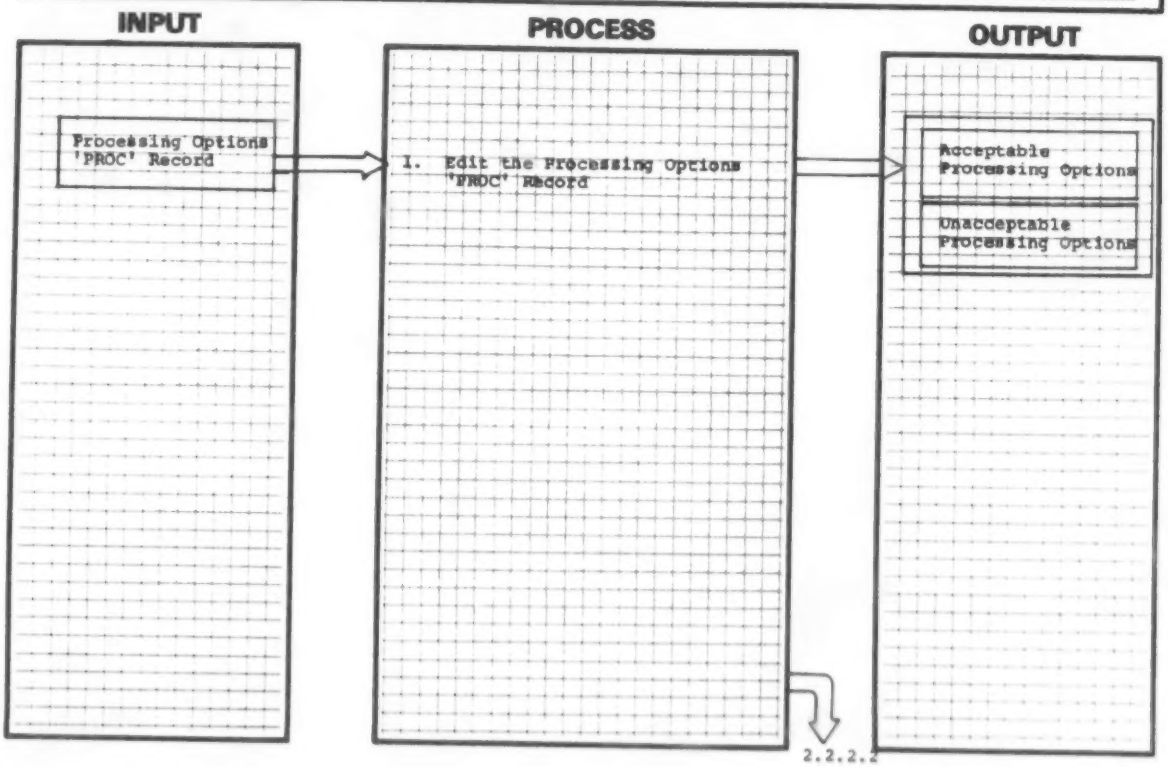


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options 'PROC' record for valid date and Standard Error Processing Options.	2.2.2.1	WAQC010	
2	Edit for Processing Options other than 'PROC'. If found, it is an error and the job is terminated.	2.2.2.2	WAQC010	
	Note: All errors produce messages on the Standard Update Statistics Report and program execution is terminated after Step 3 below.			
3	Build the first record of the Standard Error File (SEF).	2.2.2.3	WAQC010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 12/17/76 Page: 1 of 1

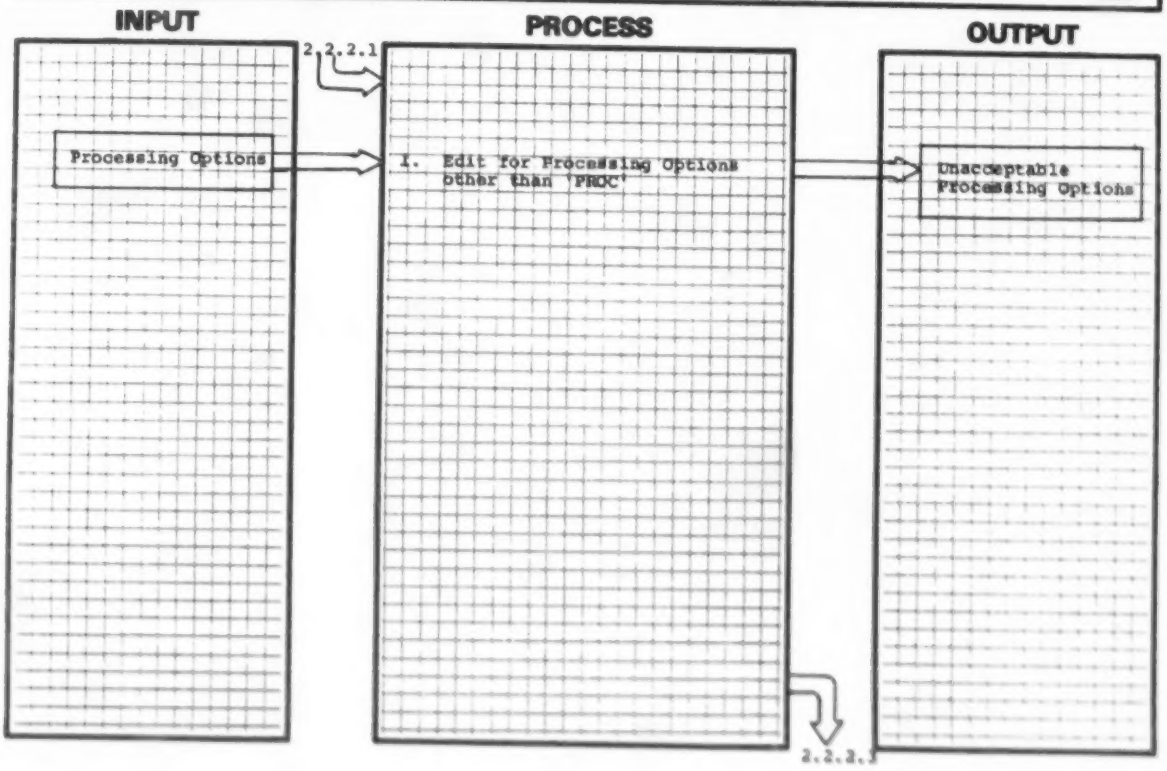
Diagram No.: 2.2.2.1 Description: Edit 'PROC' Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options record is identified by 'PROC' in positions 1-4. a. If positions 5-10 do not contain a valid date, move message 'ERROR - INVALID DATE ON PROC RECORD' to the error message area. Except for continued editing of the other Processing Options, all other processing is bypassed. b. If position 11 does not contain a 'Y' or 'N', move message 'ERROR - PSPI-PROC-OUTPUT NOT EQUAL TO Y OR N' to the error message area. Except for continued editing of the other Processing Options and building the first record of the Standard Error File (SEF), all other processing is bypassed. c. If position 12 does not contain a 'Y' or 'N', move message 'ERROR - PSPI-PROC-FIELD-SELECT NOT Y OR N' to the error message area. All other processing is bypassed. All fields are edited even though a previous error has been detected. If an error is detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Error Report.		WAQC010	101 203 MSIS. 208 MSIS. 309

MODEL STATE INFORMATION SYSTEM

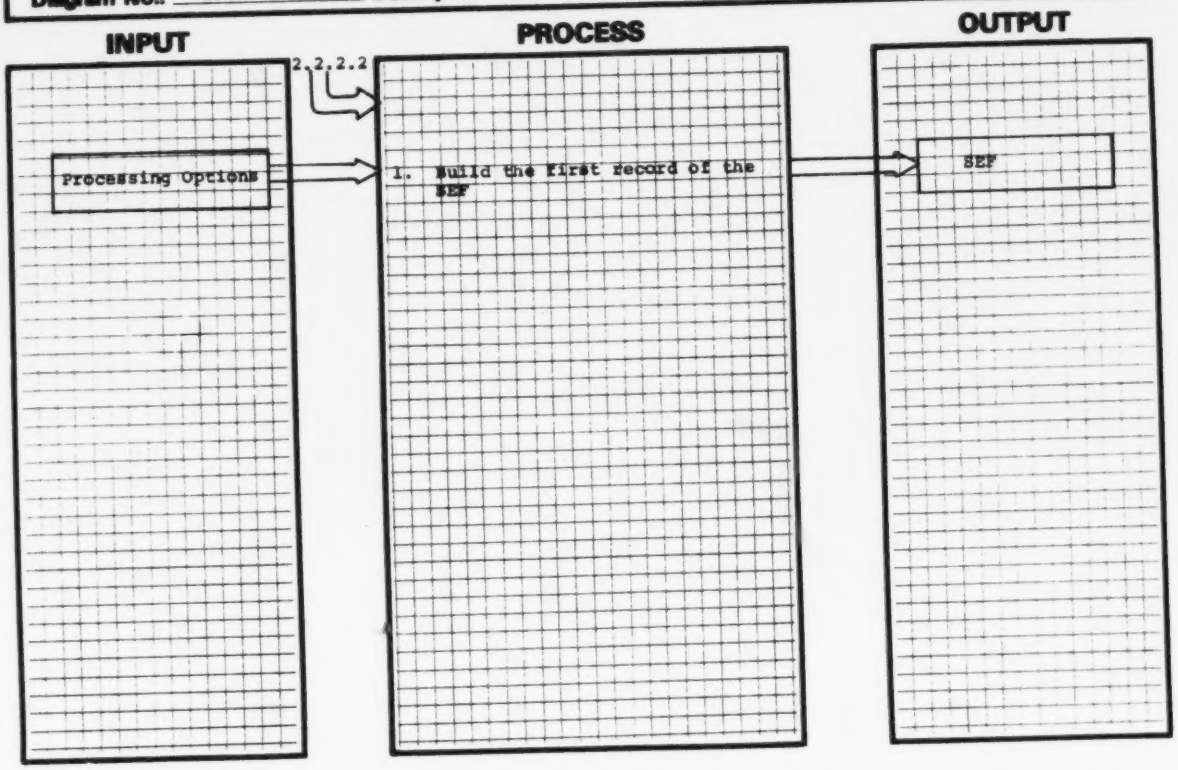
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 **of** 1
Diagram No.: 2.2.2.2 **Description:** Edit for Other Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'PROC' in positions 1-4. If found, move message 'ERROR - NO PROC RECORD SUPPLIED' to the error message area. All other processing is bypassed. If an error has been detected, an image of the Processing Options card and all associated error messages are to be printed on the Standard Update Statistics Report.		WAQC010	203 MSIS. 300

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.2.3 **Description:** Edit 'PROC' Processing Options

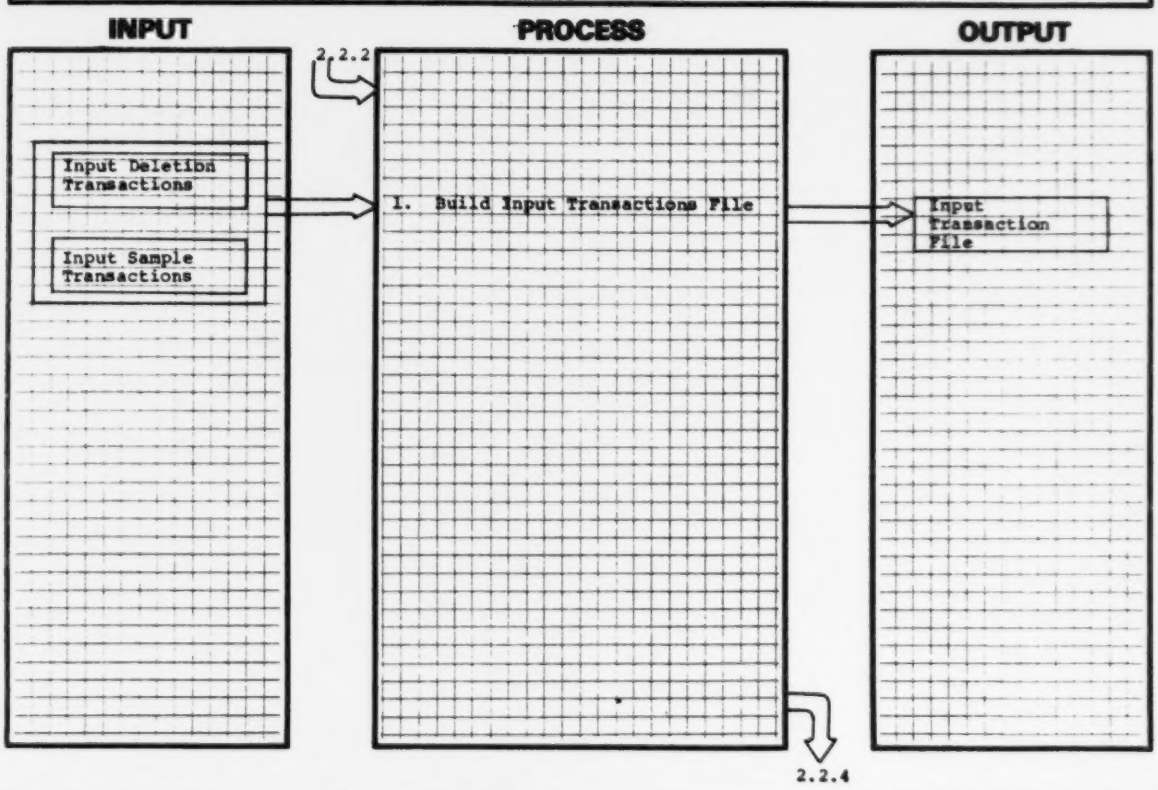


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options record for the Standard Error File (SEF) is always built and written in this step. 'LOW VALUES' are placed in positions 1-4. The Processing Options date is placed in positions 5-10 and the Standard Error Processing Options in positions 11-12. If the 'PROC' record is missing or if the date is invalid or if any of the Standard Error Processing Options are invalid, this record is built and written with 'LOW VALUES' in positions 1-4 and blanks in the remainder of the record.			103 MSIS. 208

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

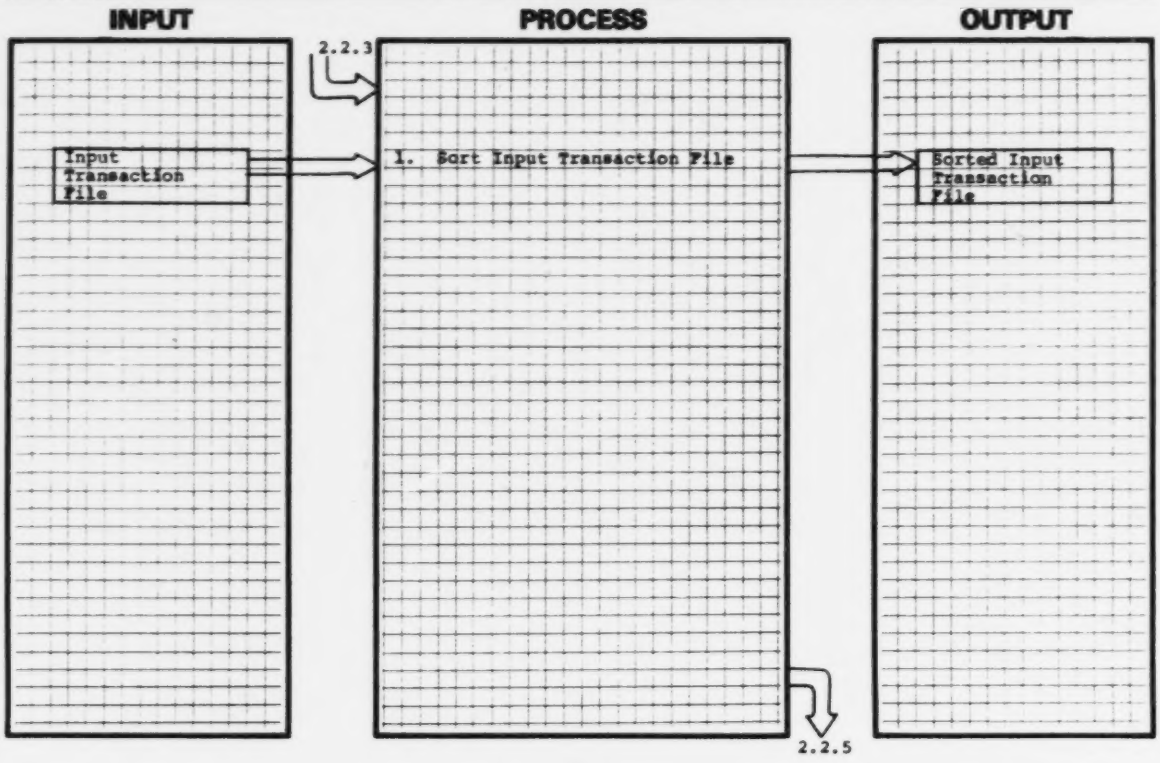
Diagram No.: 2.2.3 **Description:** Build Input Transactions File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Input Transactions File records from the Periodic Sample File (PSF) Input Transactions - both deletion and sample inputs. The input transactions are reformatted into a larger transaction record, PSFI-PSUM-RECORD, to better facilitate sorting for editing against the PSF in 2.2.5. No editing of the data elements is performed, they are simply copied over to the Input Transaction File.		WAQC010	105 106 107 108 205 206 207 400 thru 402

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.4 **Description:** Sort Input Transaction File

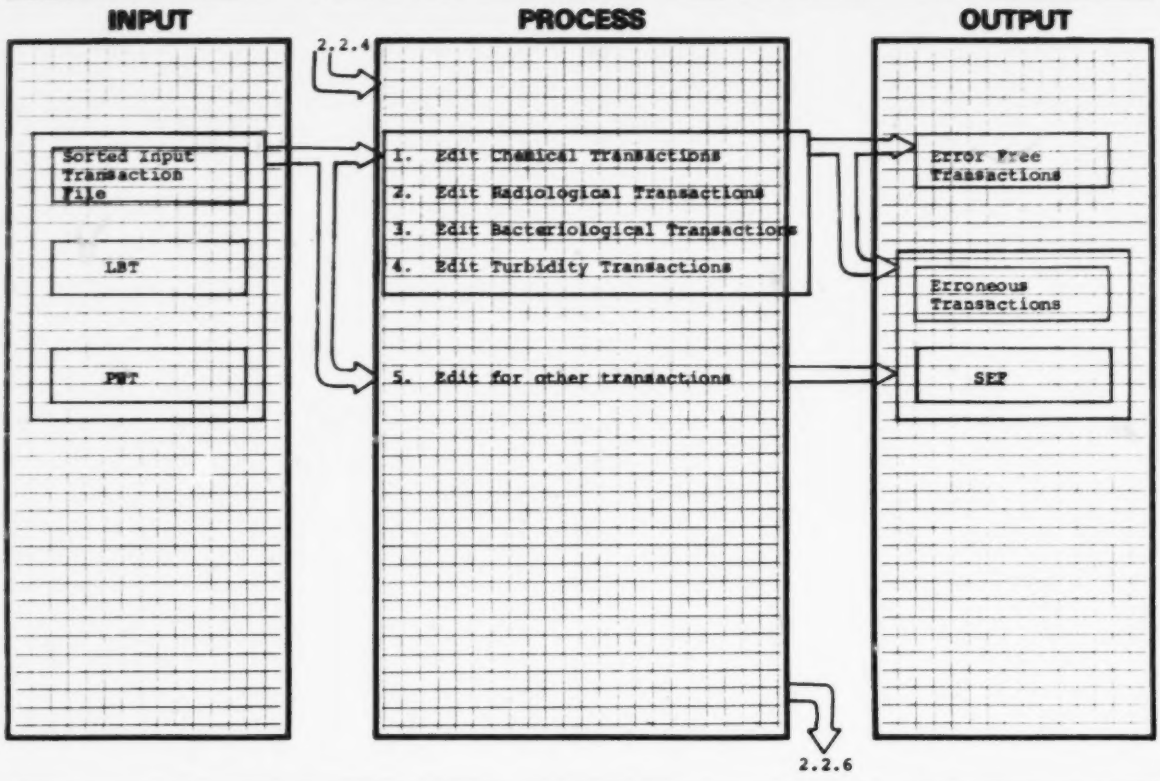


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Input Transaction File from 2.2.3 into the proper sequence for editing against the Periodic Sample File (PSF). The Input Transaction File sort sequence is Sample Time within Sample Date within Sample Type within Sample ID Code within Contaminant ID within Transaction Code within PWS ID.		WAQC010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 12/17/76 Page: 1 of 2

Diagram No.: 2.2.5 Description: Edit Input Transactions File



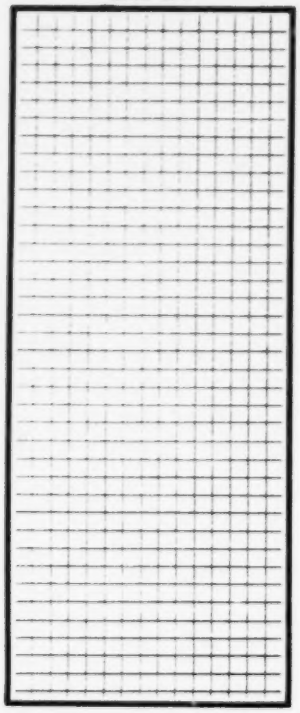
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Chemical deletion transactions are validated against internal edit criteria and the internal Code Value Table (CVT). Chemical Sample Transactions are validated against internal edit criteria and against the internal CVT, the Laboratory Table (LBT), and the Public Water Table (PWT). Error free transactions are posted to the Error Free Transactions file to be processed against the Periodic Sample File (PSF) in HIPO 2.2.6. Erroneous transactions are posted to the Standard Error File (SEF), then flagged with an asterisk (*), then posted to the Erroneous Transactions File, and not processed against the PSF.	2.2.5.1	WAQC010	
2	Radiological transactions are processed in the same manner as chemical transactions.	2.2.5.2	WAQC010	
3	Bacteriological deletion transactions are processed in the same manner as chemical and radiological transactions. Bacteriological sample transactions are of two forms: detail and summary. Those fields common to both will undergo the same edit while those fields not common to both will undergo separate edits although both forms will be stored on the PSF as one record type. With this exception, bacteriological transactions are edited in the same manner as chemical transactions.	2.2.5.3	WAQC010	
4	Turbidity transactions are edited in the same manner as bacteriological transactions since the sample transactions may exist in detail or summary form.	2.2.5.4	WAQC010	

MODEL STATE INFORMATION SYSTEM

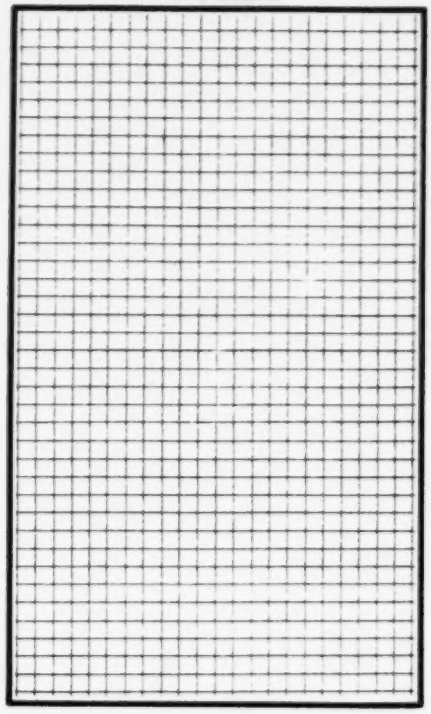
Diagram Type: Overview Subsystem: Water Quality Compliance Date: 12/17/76 Page: 2 of 2

Diagram No.: 2.2.5 Description: Edit Input Transactions File

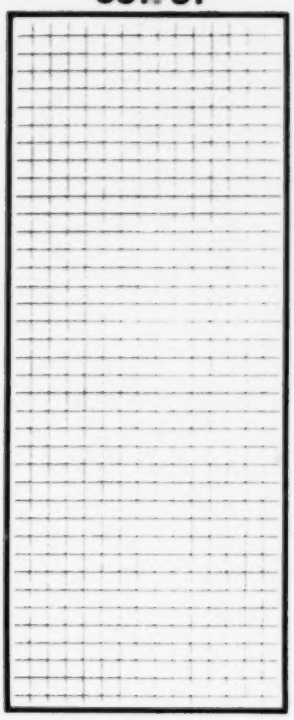
INPUT



PROCESS



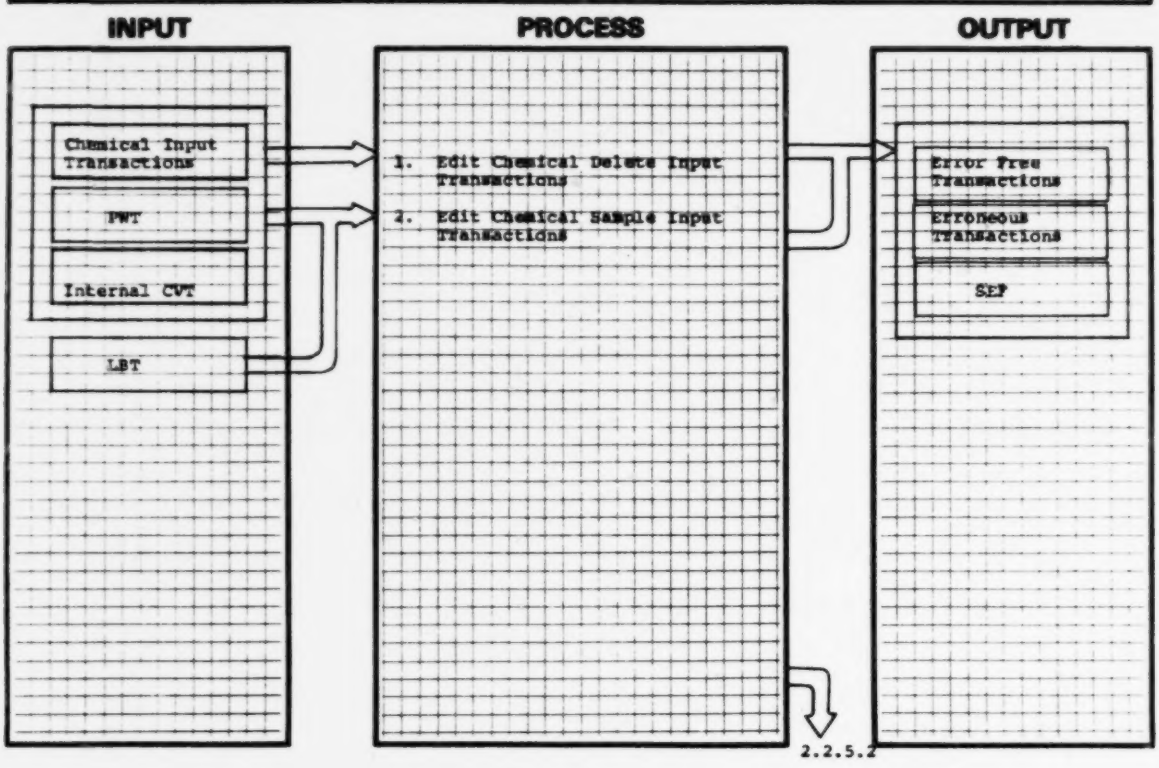
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
5	The Input Transactions are edited for types other than those mentioned in Steps 1-4. If found, the erroneous transactions are posted to the Standard Error File (SEF), flagged with an asterisk (*), posted to the Erroneous Transactions File, and not processed against the PSF. Note: The LBT and PWT are direct access files. In the Data Element Dictionary, the "yes" in the block labeled "Mandated for MSIS" indicates that the PSF record cannot be created if that field is in error or missing. So if data is missing or in error, reject the entire transaction.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 12/17/76 Page: 1 of 1
Diagram No.: 2.2.5.1 Description: Edit Chemical Transactions

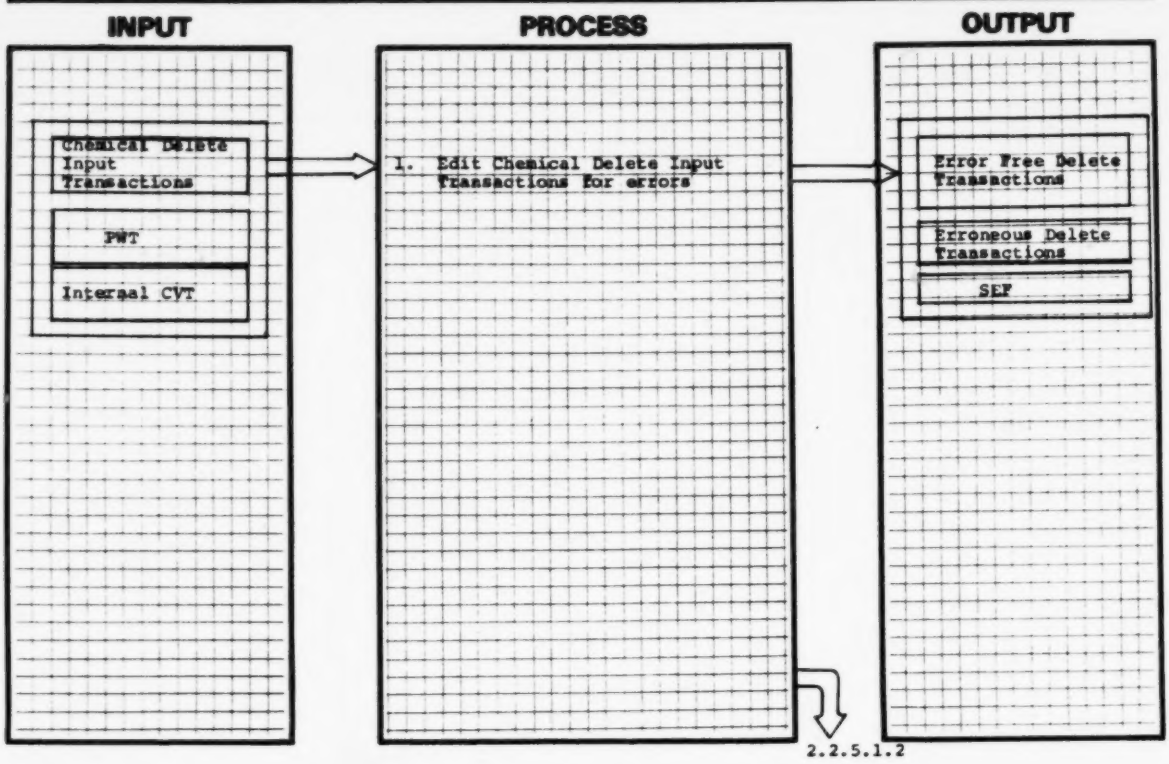


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Chemical Delete Input Transactions are edited against the internal Code Value Table (CVT), against the Public Water Table (PWT) and against internal program code for errors. Those transactions in error are posted both to the Standard Error File (SEF) and to the Erroneous Transactions File. Those transactions not in error are posted to the Error Free Transaction File.	2.2.5.1.1	WAQC010	
2	Chemical Sample Input Transactions are edited and handled in the same manner as Step 1. In addition, the transactions are edited against the Laboratory Table (LBT). Transactions are posted and errors are handled in the same manner as Step 1. Note: Chemical transaction codes are the following: 01 - Delete Transaction 03 - New Chemical Sample Chemical transactions are identified by a Contaminant ID code within the range of 1000 - 2999.	2.2.5.1.2	WAQC010	

MODEL STATE INFORMATION SYSTEM -

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

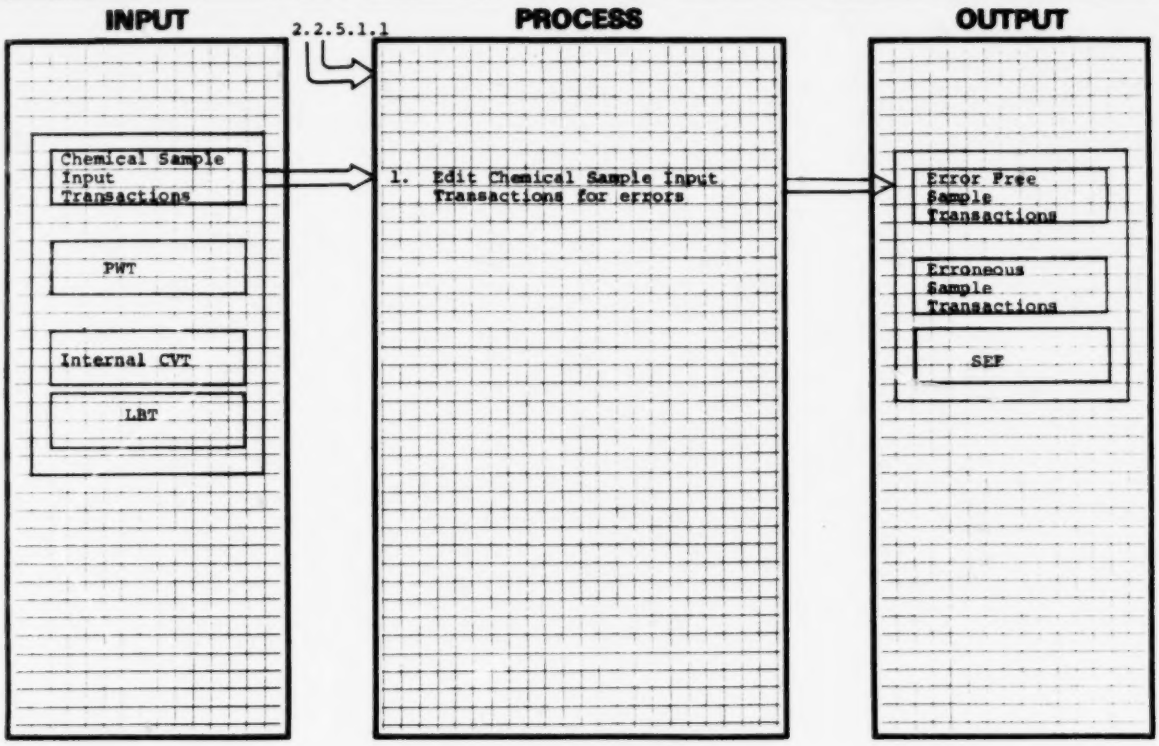
Diagram No.: 2.2.5.1.1 **Description:** Edit Chemical Delete Input Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Chemical Delete Input Transactions against the internal Code Value Table (CVT) for the Contaminant ID and against the Public Water Table (PWT) for the PWS ID. The transactions are also edited against internal program code for other syntax errors. If any errors are found, the transaction in error is posted to the Standard Error File (SEF), then flagged with an asterisk (*), and then posted to the Erroneous Transactions File. The transactions not in error are posted to the Error Free Transactions File. Note: The Delete Transaction Code is '01'.		WAQC010	105 205 PWSI. 201 MSIS. 207 DED PWSI. 234

MODEL STATE INFORMATION SYSTEM

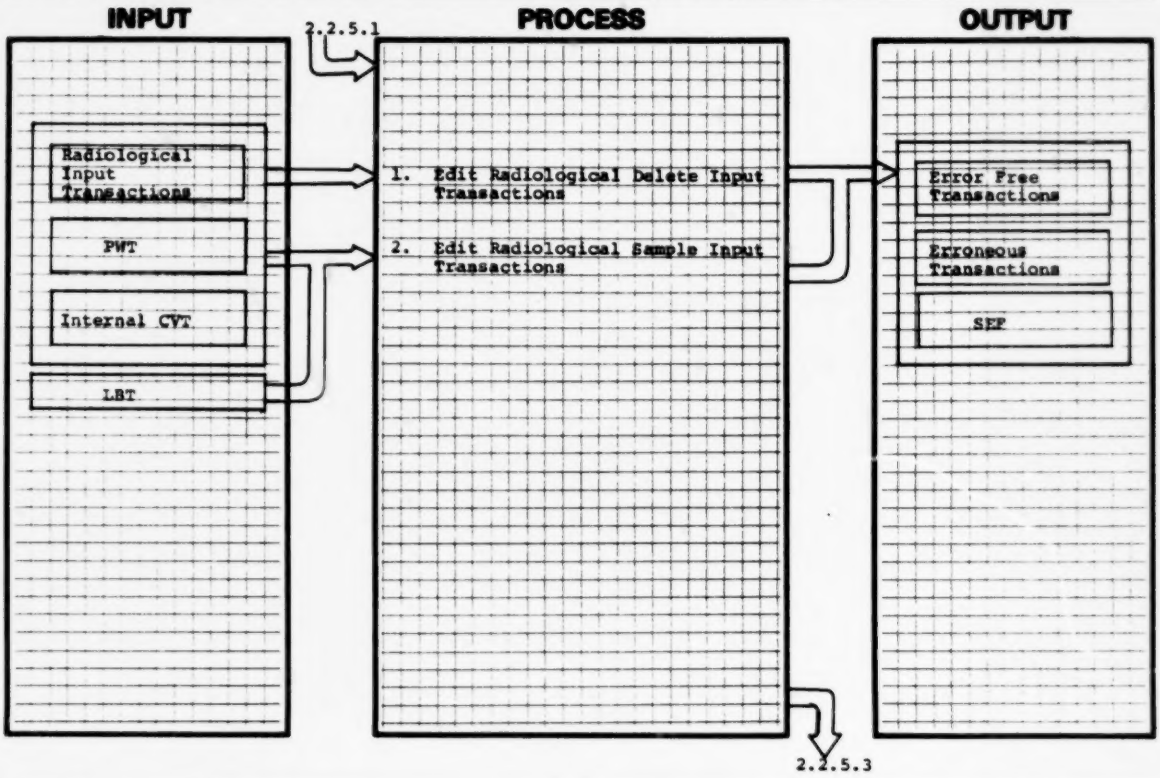
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.5.1.2 **Description:** Edit Chemical Sample Input Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Chemical Sample Input Transactions against the internal Code Value Table (CVT) for the Contaminant ID; against the Public Water Table (PWT) for the PWS ID; and against the Laboratory Table (LBT) for the Lab ID, the Analysis Method, and the Analysis Date. The expiration date of the Laboratory's authorization for an analysis method is compared to the Analysis Date of the sample to be sure the analysis was performed before the expiration date. The transactions are also edited against internal program code for other syntax errors. If any errors are found, the transaction in error is posted to the Standard Error File (SEP) and then flagged with an asterisk (*), and then posted to the Erroneous Transactions File. The transactions not in error are posted to the Error Free Transactions File. Note: The Transaction Code for new chemical samples is '03'.		WAQC010	106 206 400 401 PWSI. 201 MSIS. 207 DED PWSI. 234 250 256

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.5.2 **Description:** Edit Radiological Transactions

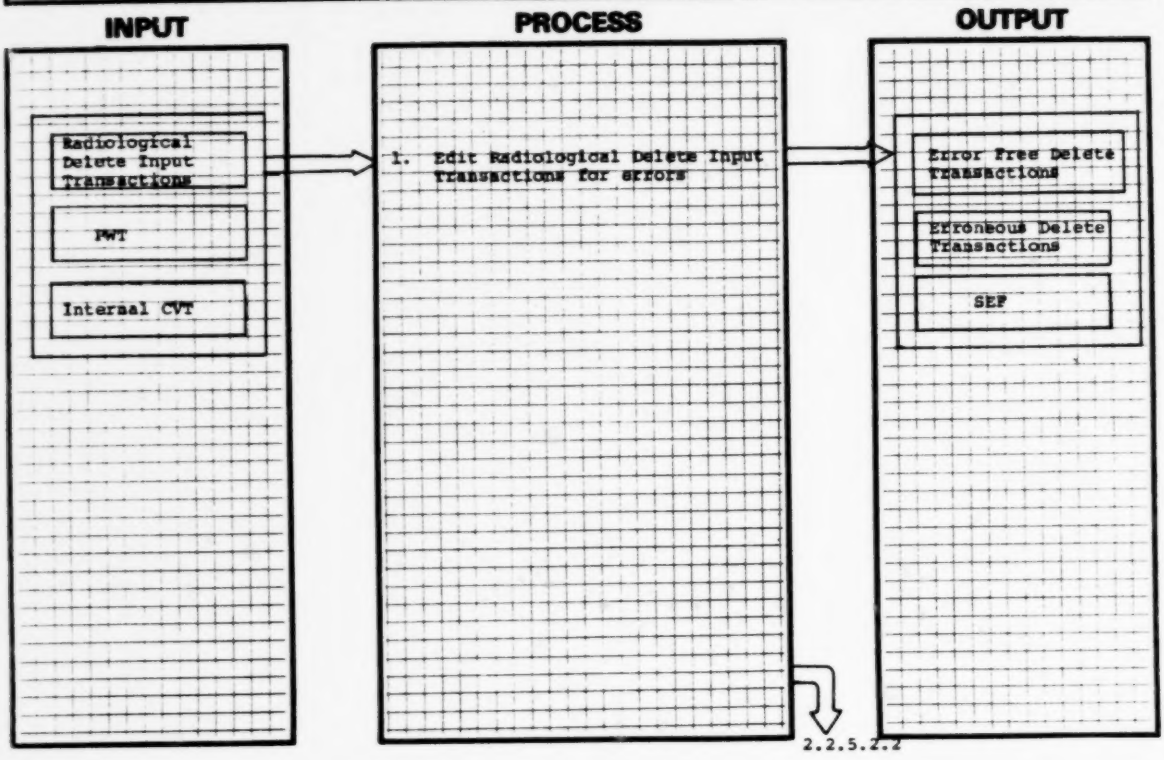


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Radiological Delete Input Transactions are edited against the internal Code Value Table (CVT), against the Public Water Table (PWT) and against internal program code for errors. These transactions in error are posted both to the Standard Error File (SEF) and to the Erroneous Transaction File. Those transactions not in error are posted to the Error Free Transaction File.	2.2.5.2.1	WAQC010	
2	Radiological Sample Input Transactions are edited and handled in the same manner as Step 1. In addition, the transactions are edited against the Laboratory Table (LBT). Transactions are posted and errors are handled in the same manner as Step 1. Note: Radiological transactions codes are the following: 01 - Delete Transaction 03 - New Radiological Sample Radiological transactions are identified by a Contaminant ID code within the range of 4000 - 4399.	2.2.5.2.2	WAQC010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 12/17/76 Page: 1 of 1

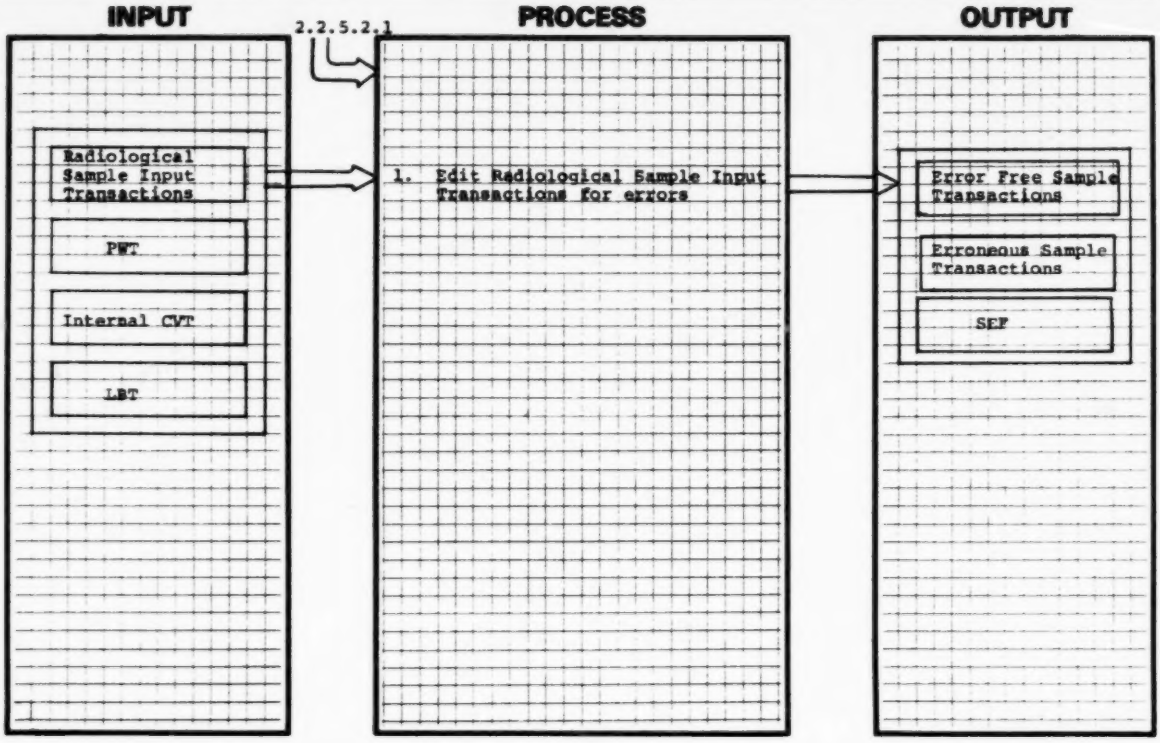
Diagram No.: 2.2.5.2.1 Description: Edit Radiological Delete Input Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Radiological Delete Input Transactions against the internal Code Value Table (CVT) for the Contaminant ID and against the Public Water Table (PWT) for the PWS ID. The transactions are also edited against internal program code for other syntax errors. If any errors are found, the transaction in error is posted to the Standard Error File (SEF), then flagged with an asterisk (*), and then posted to the Erroneous Transactions File. The transactions not in error are posted to the Error Free Transaction File. Note: The Delete Transaction Code is '01'.		WAQC010	105 205 PWSI. 201 MSIS. 207 DED PWSI. 234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.5.2.2 **Description:** Edit Radiological Sample Input Transactions

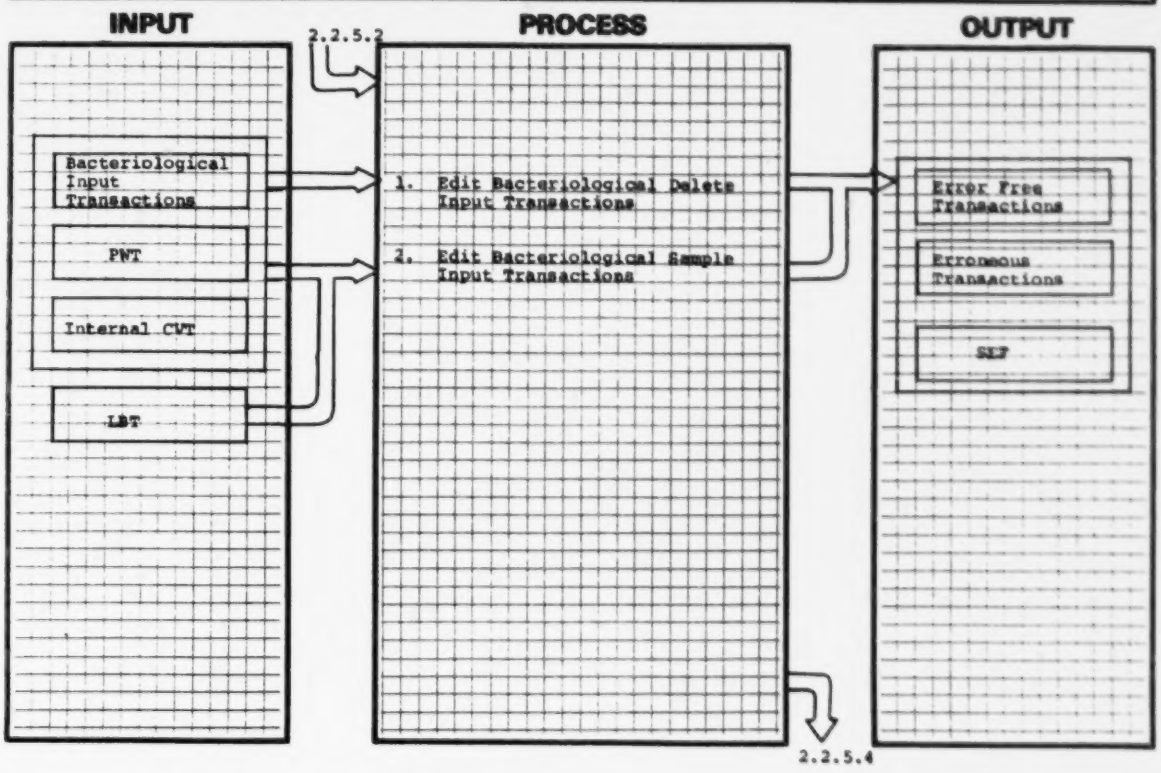


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Radiological Sample Input Transactions against the internal Code Value Table (CVT) for the Contaminant ID; against the Public Water Table (PWT) for the PWS ID; and against the Laboratory Table (LBT) for the Lab ID, the Analysis Method, and the Analysis Date. The expiration date of the Laboratory's authorization for an analysis method is compared to the Analysis Date of the sample to be sure the analysis was performed before the expiration date. The transactions are also edited against internal program code for other syntax errors. If any errors are found, the transaction in error is posted to the Standard Error File (SEF), then flagged with an asterisk (*), and then posted to the Erroneous Transactions File. The transactions not in error are posted to the Error Free Transactions File. Note: The Transaction Code for new radiological samples is '03'.		WAQC010	106 206 402 PWSI. 201 MSIS. 207 DED PWSI. 234 250 256

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

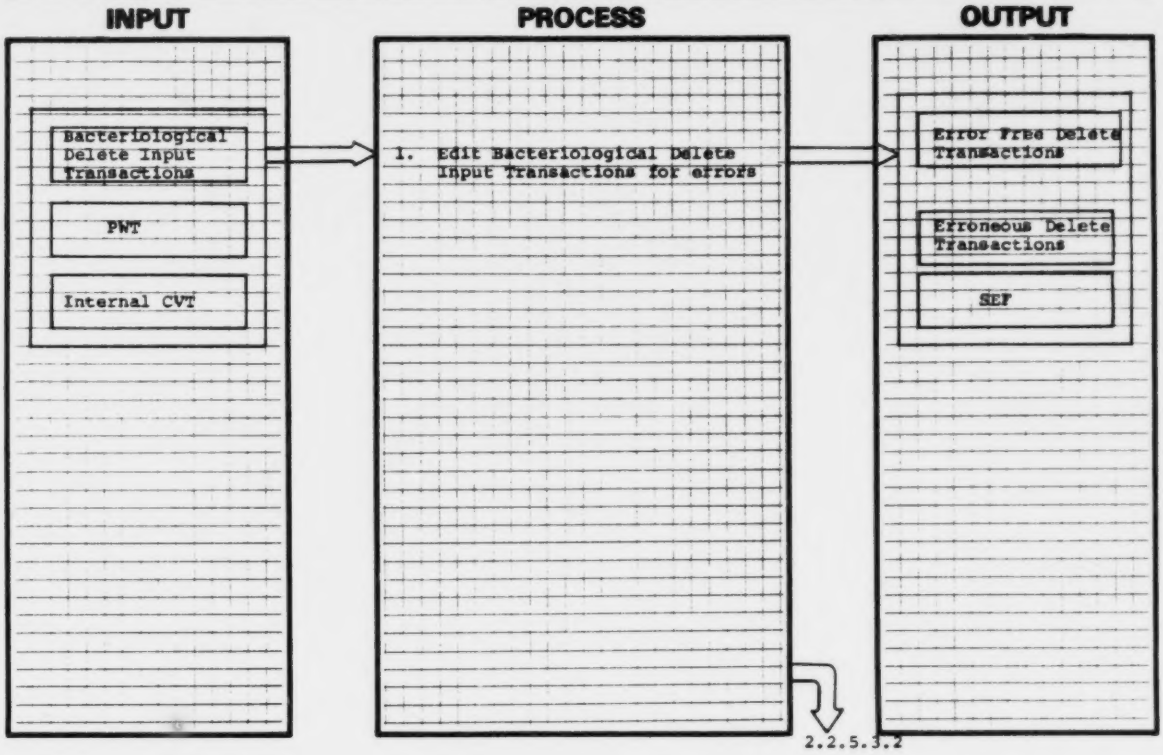
Diagram No.: 2.2.5.3 **Description:** Edit Bacteriological Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Bacteriological Delete Input Transactions are edited against the internal Code Value Table (CVT); against the Public Water Table (PWT) and against internal program code for errors. These transactions in error are posted both to the Standard Error File (SEF) and to the Erroneous Transactions File. Those transactions not in error are posted to the Error Free Transaction File.	2.2.5.3.1	WAQC010	
2	Bacteriological Sample Input Transactions are edited and handled in the same manner as Step 1. In addition, the transactions are edited against the Laboratory Table (LBT). Transactions are posted and errors are handled in the same manner as Step 1. Note: Bacteriological transaction codes are the following: 01 - Delete Transaction 05 - New Bacteriological Detail Sample 07 - New Bacteriological Summary Analysis Bacteriological Transactions are identified by a Contaminant ID code within the range of 3000 - 3999.	2.2.5.3.2	WAQC010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.5.3.1 **Description:** Edit Bacteriological Delete Input Transactions

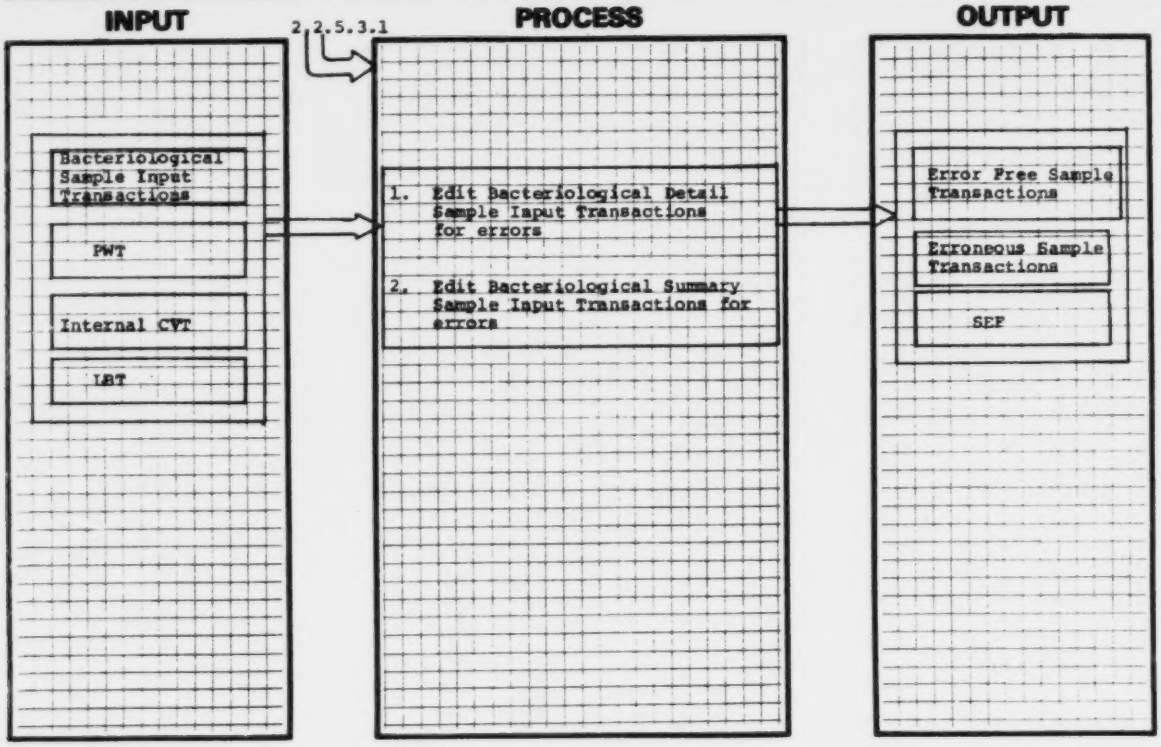


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Bacteriological Delete Input Transactions against the internal Code Value Table (CVT) for the Contaminant ID and against the Public Water Table (PWT) for the PWS ID. The transactions are also edited against internal program code for other syntax errors. If any errors are found, the transaction in error is posted to the Standard Error File (SEF), then flagged with an asterisk (*), and then posted to the Erroneous Transactions File. The transactions not in error are posted to the Error Free Transactions File. Note: The Delete Transaction code is '01'.		WAQC010	105 205 PWSI. 201 MSIS. 207 DED PWSI. 234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

Diagram No.: 2.2.5.3.2 **Description:** Edit Bacteriological Sample Input Transactions

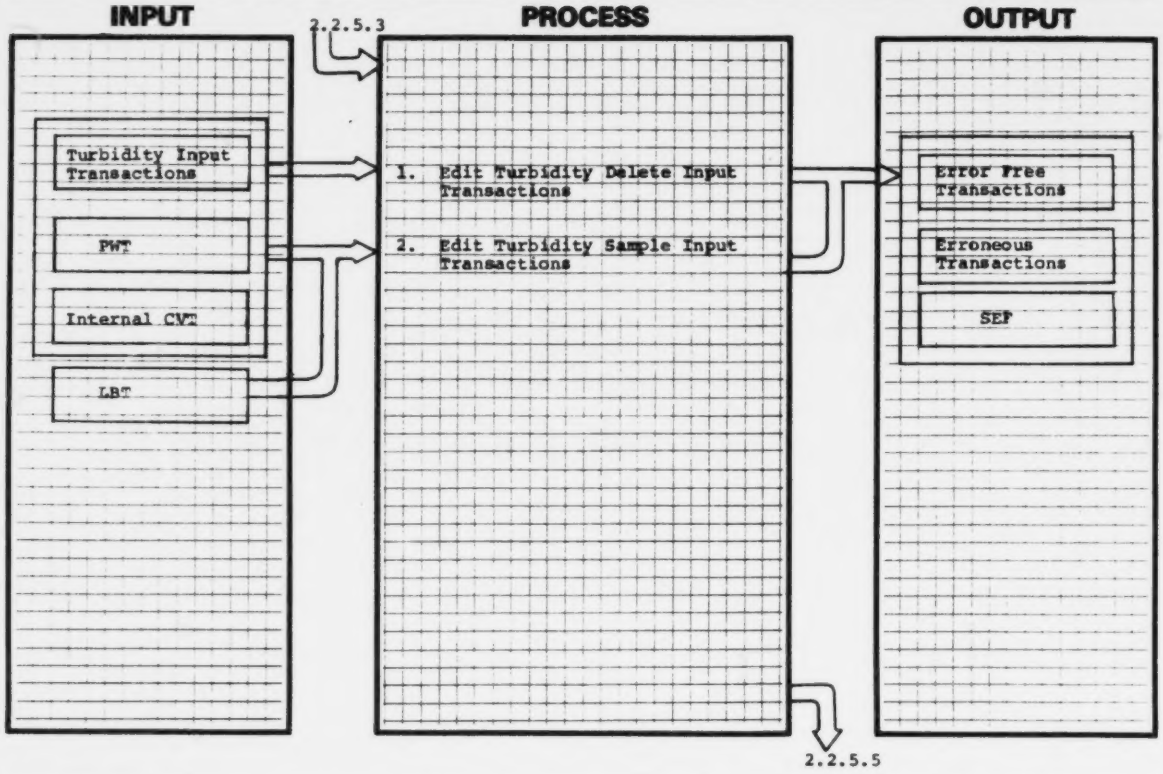


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Bacteriological Detail Sample Input Transactions against the internal Code Value Table (CVT) for the Contaminant ID; against the Public Water Table (PWT) for the PWS ID; and against the Laboratory Table (LBT) for the Lab ID, the Analysis Method, and the Analysis Date. The expiration date of the Laboratory's authorization for an analysis method is compared to the Analysis Date of the sample to be sure the analysis was performed before the expiration date. The transactions are also edited against internal program code for other syntax errors. If any errors are found, the transaction in error is posted to the Standard Error File (SEF), then flagged with an asterisk (*), and then posted to the Erroneous Transactions File. The transactions not in error are posted to the Error Free Transactions File.		WAQC010	107 206 PWSI. 201 NSIS. 207 DED PWSI. 234 250 256 401
2	Edit Bacteriological Summary Sample Input Transactions against the internal CVT, the PWT, and the LBT - in the same manner as Step 1. Errors are handled and transactions posted in the same manner as Step 1. Note: The Transaction Codes for new bacteriological samples are the following: '05' - New Detail Sample '07' - New Summary Analysis		WAQC010	108 207 PWSI. 201 NSIS. 207 DED PWSI. 234 250 256 402

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

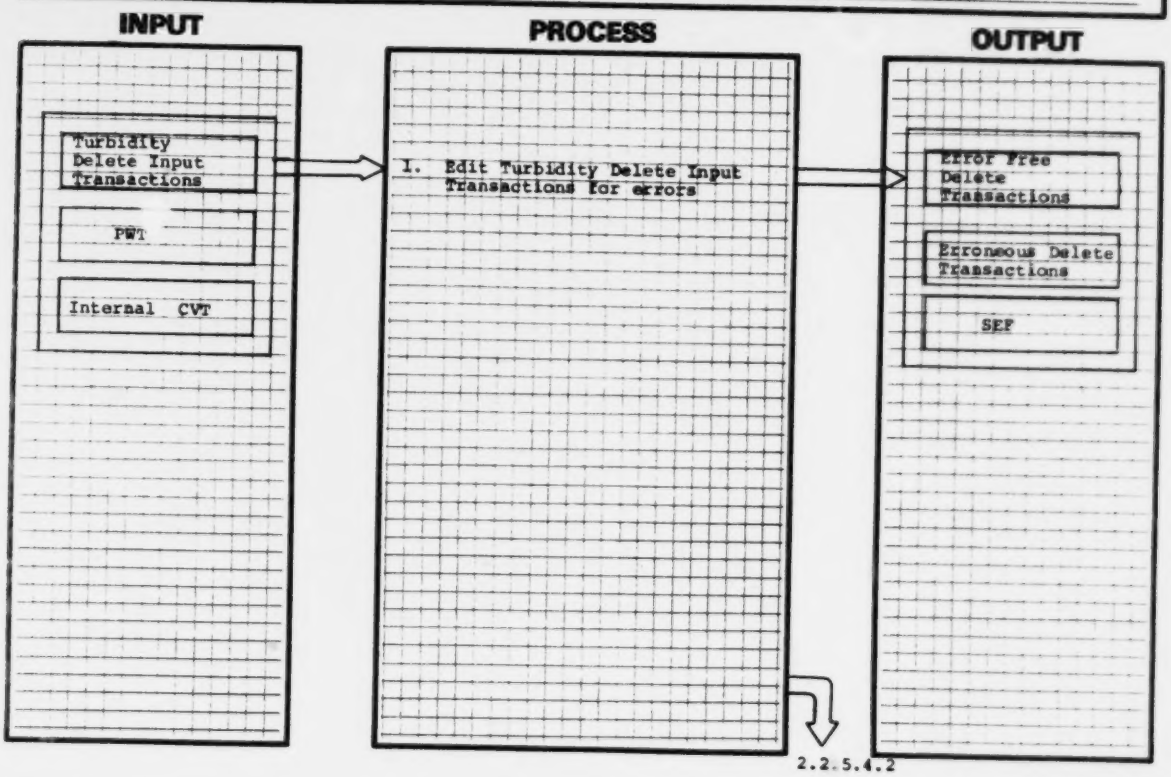
Diagram No.: 2.2.5.4 **Description:** Edit Turbidity Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Turbidity Delete Input Transactions are edited against the internal Code Value Table (CVT), against the Public Water Table (PWT) and against internal program code for errors. Tnose transactions in error are posted both to the Standard Error File (SEF) and to the Erroneous Transactions File. Those transactions not in error are posted to the Error Free Transactions File.	2.2.5.4.1	WAQC010	
2	Turbidity Sample Input Transactions are edited and handled in the same manner as Step 1. In addition, the transactions are edited against the Laboratory Table (LBT). Transactions are posted and errors are handled in the same manner as Step 1. Note: Turbidity transaction codes are the following: 01 - Delete Transactions 05 - New Turbidity Detail Sample 07 - New Turbidity Summary Analysis Turbidity transactions are identified by a Contaminant ID code within the range of 0100 - 0999.	2.2.5.4.2	WAQC010	

MODEL STATE INFORMATION SYSTEM

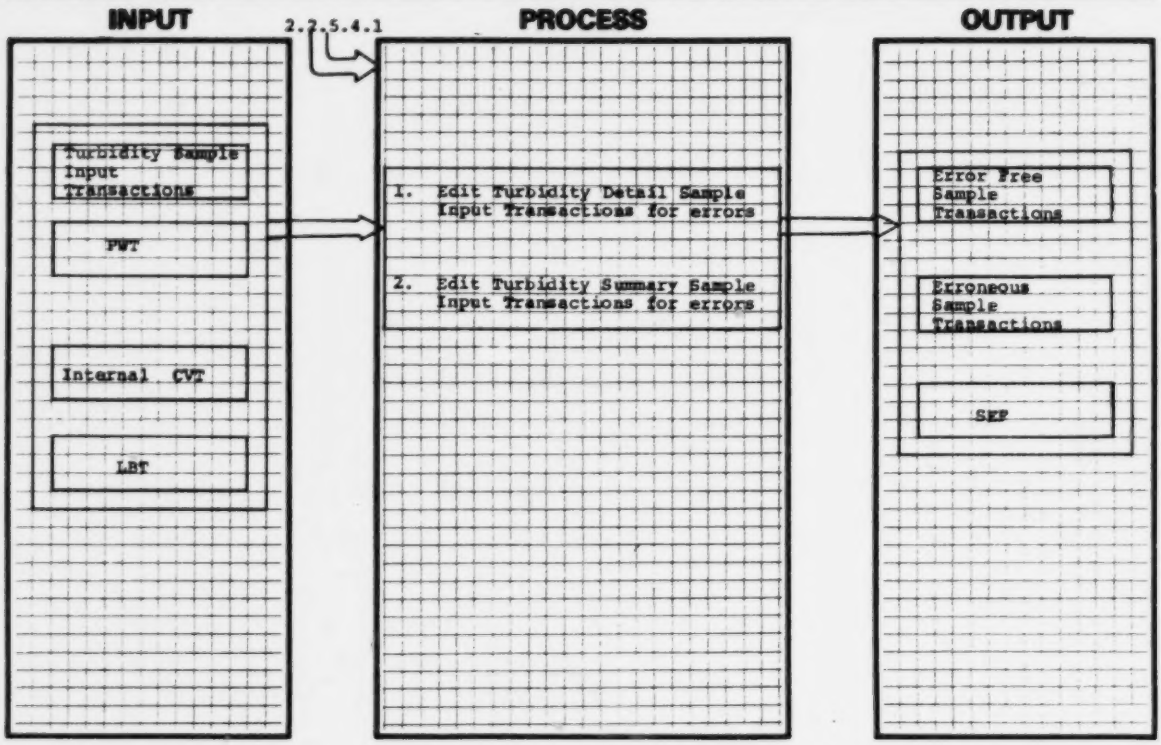
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.5.4.1 **Description:** Edit Turbidity Delete Input Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Turbidity Delete Input Transactions against the internal Code Value Table (CVT) for the Contaminant ID and against the Public Water Table (PWT) for the PWS ID. The transactions are also edited against internal program code for other syntax errors. If any errors are found, the transaction in error is posted to the Standard Error File (SEF), then flagged with an asterisk (*), and then posted to the Erroneous Transactions File. The transactions not in error are posted to the Error Free Transactions File. Note: The Delete Transaction Code is '01'.		WAQC010	105 205 PWSI. 201 MSIS. 207 DED PWSI. 234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.5.4.2 **Description:** Edit Turbidity Sample Input Transactions

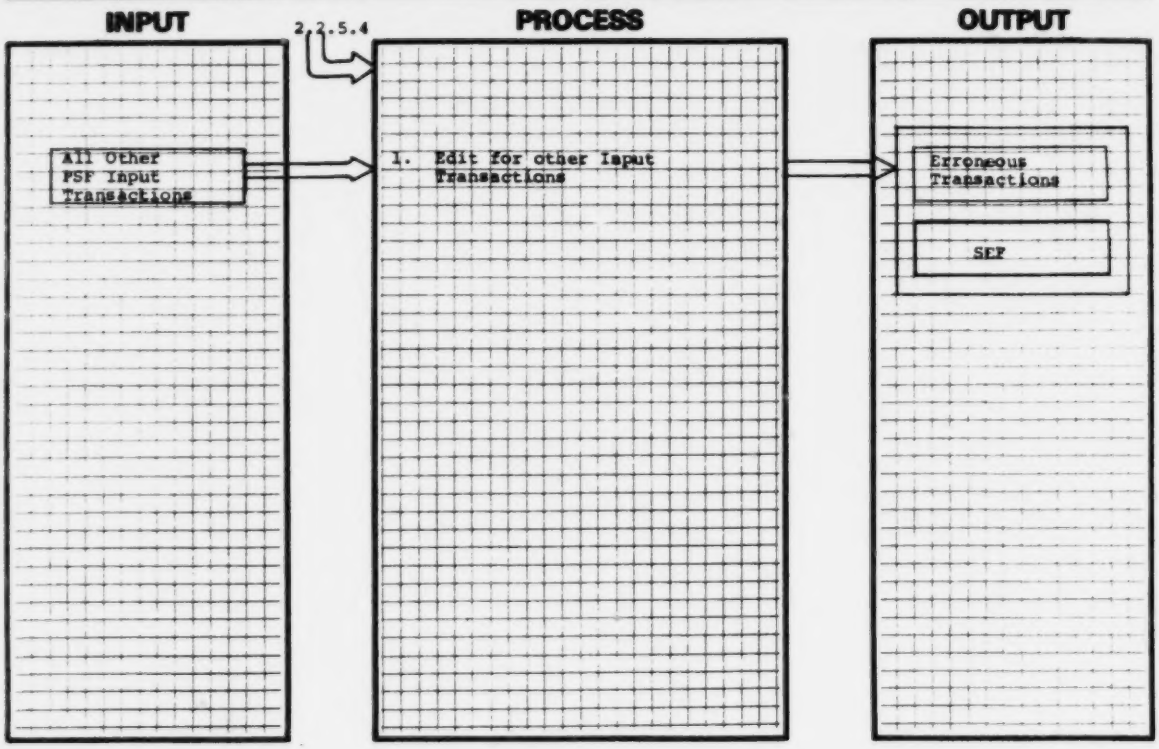


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Turbidity Detail Sample Input Transactions against the internal Code Value Table (CVT) for the Contaminant ID; against the Public Water Table (PWT) for the PWS ID; and against the Laboratory Table (LBT) for the Lab ID, the Analysis Method, and the Analysis Date. The expiration date of the Laboratory's authorization for an analysis method is compared to the Analysis Date of the sample to be sure the analysis was performed before the expiration date. The transactions are also edited against internal program code for other syntax errors. If any errors are found, the transaction in error is posted to the Standard Error File (SEF), then flagged with an asterisk (*), and then posted to the Erroneous Transactions File. The transactions not in error are posted to the Error Free Transactions File.		WAQC010	107 206 PWSI. 201 MSIS. 207 DED PWSI. 234 250 256 401
2	Edit Turbidity Summary Sample Input Transactions against the internal CVT, the PWT, and the LBT, in the same manner as Step 1. Errors are handled and transactions posted in the same manner as Step 1. Note: The Transaction Codes for new turbidity samples are the following: '05' - New Detail Sample '07' - New Summary Analysis		WAQC010	108 207 PWSI. 201 MSIS. 207 DED PWSI. 234 250 256 402

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

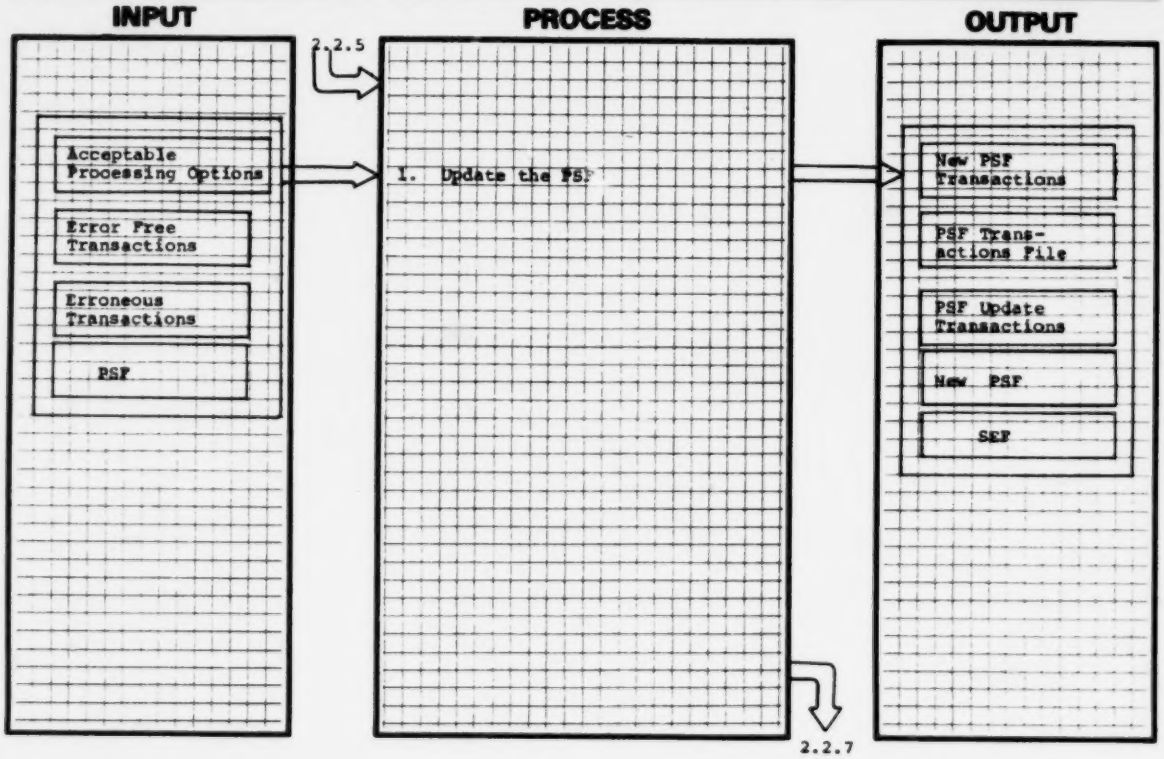
Diagram No.: 2.2.5.5 **Description:** Edit for Other Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit for transactions with Contaminant ID Codes not valid for Chemical, Radiological, Bacteriological, or Turbidity contaminants. Also edit transactions for invalid transaction codes: '01' is valid for all delete transactions '03' is valid only for Chemical or Radiological sample transactions '05' and '07' are valid only for Bacteriological or Turbidity sample transactions The error code for invalid transaction code is '017'. These transactions are in error and are posted to the Standard Error File (SEF) with an error code of '017' and then flagged with an asterisk (*) and posted to the Erroneous Transactions File.		WAQC010	MSIS. 207

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 2
Diagram No.: 2.2.6 **Description:** Update the PSF

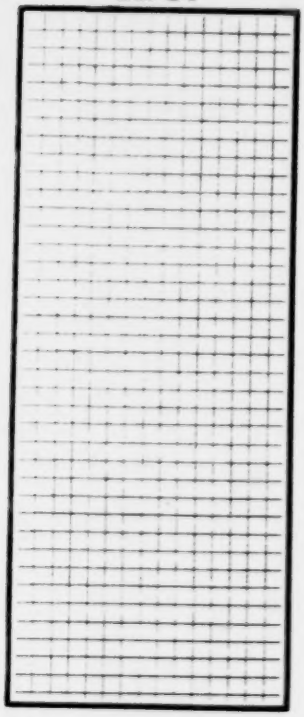


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Records on the Periodic Sample File (PSF) have a unique sample key consisting of a 5-digit Julian date plus a 5-digit sequence number. The last sample key of the previous PSF Update run is stored as the first record of the PSF. At the start of each PSF run, the date in this first PSF record is compared to the processing date of the run. If the two dates are the same, the stored Sample Key is used as the base for assigning new Sample Keys; if not the same, the processing date and sequence counter of zero are used as the base. The date of the Sample Key is originally obtained from the Processing Options 'PROC' record; while the sequence number of the Sample Key is incremented by one for each record added during the PSF Update run. Transactions processed against the PSF consist of delete transactions and add transactions. For delete transactions, the Sample Key, PWS-ID, Contaminant-ID and Analysis Method of the transaction is matched against the corresponding PSF field. If no match is found, the transaction is in error and is posted to the Standard Error File (SEF), then flagged with an asterisk (*), and then posted to the PSF Transaction File. Delete transactions not in error are also posted to the PSF transaction file, but in addition, are posted to the PSF Update Transactions File and the matching PSF record is dropped from the PSF.		WAQC010	103 203 251 252 MSIS. 207

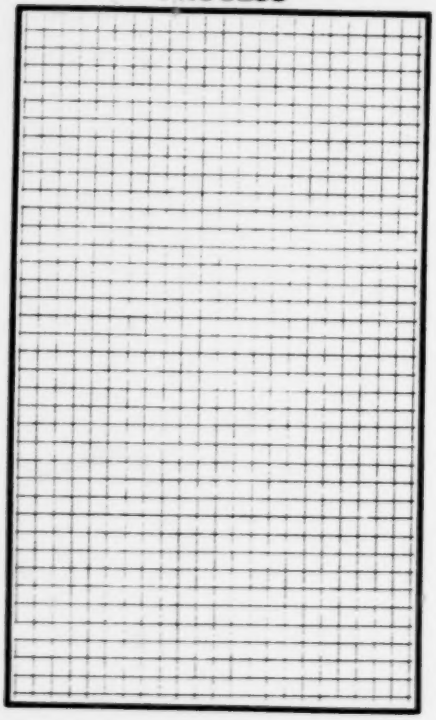
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 2 of 2
Diagram No.: 2.2.6 **Description:** Update the PSF

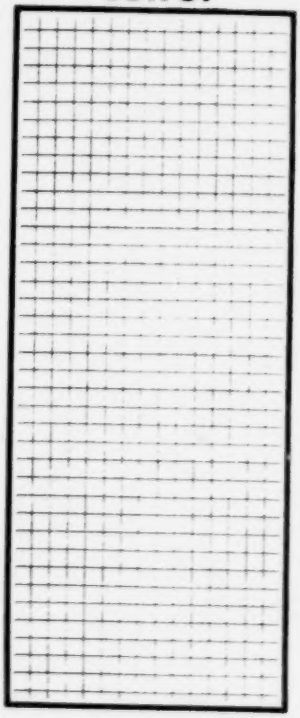
INPUT



PROCESS



OUTPUT

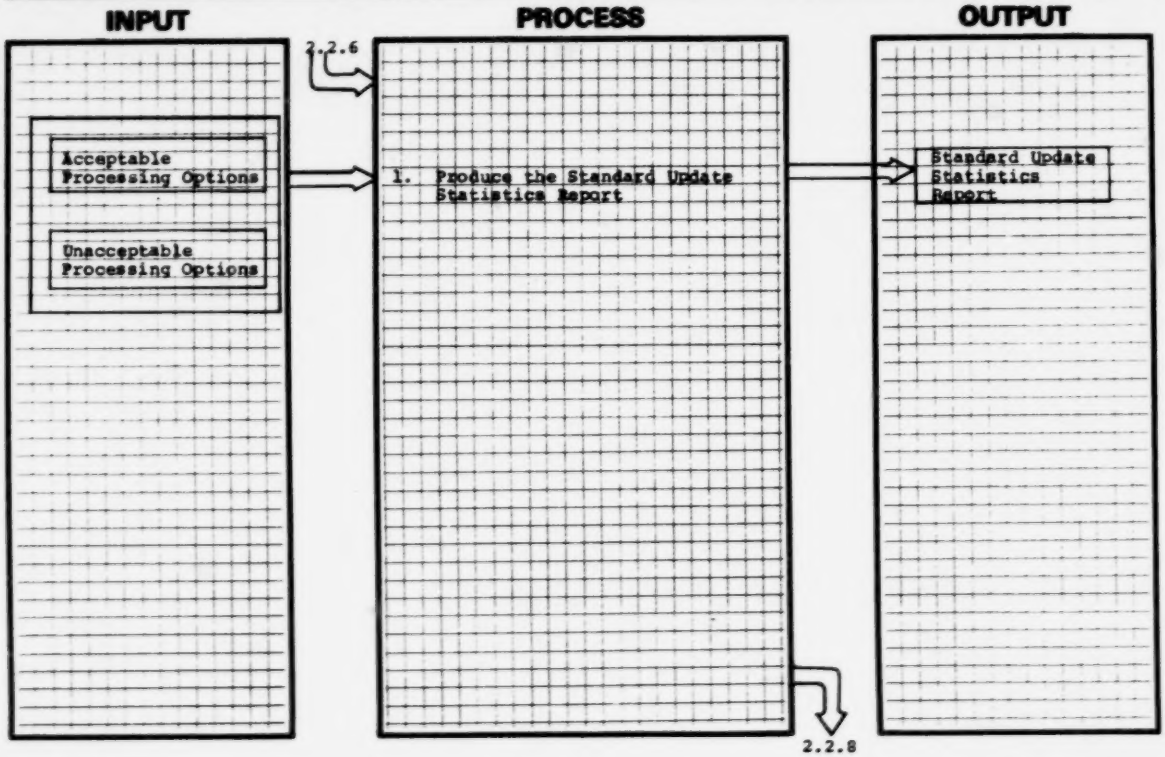


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Add transactions which are not duplicates are added to the Periodic Sample File (PSF). These require the generation of new Sample Keys using the base described at the beginning of this step and then incrementing the sequence counter by one for each new record added. All Add transactions are posted to the PSF Transaction File, the PSF Update Transaction File, and the New PSF Transactions File. All records from the old PSF to be copied to the new PSF are posted to the New PSF Transactions File. All Erroneous Transactions File records are copied in sequence to the PSF Transactions File, retaining the asterisk (*) they were flagged with in HIPO 2.2.5. The first record of the New PSF is written with 'LOW VALUES' in positions 1-5 and the last Sample Key generated in positions 6-15. The New PSF Transactions File is passed to HIPO 2.2.8 to build the New PSF. The PSF Transactions File is passed to WAQC011 to be used to produce the PSF Input Transactions Report. The PSF Update Transactions File is passed to HIPO 2.2.9 to be used to produce the PSF Update Report. The New PSF is passed to HIPO 2.2.8 with the first record already in it. The remaining records are added in HIPO 2.2.8.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

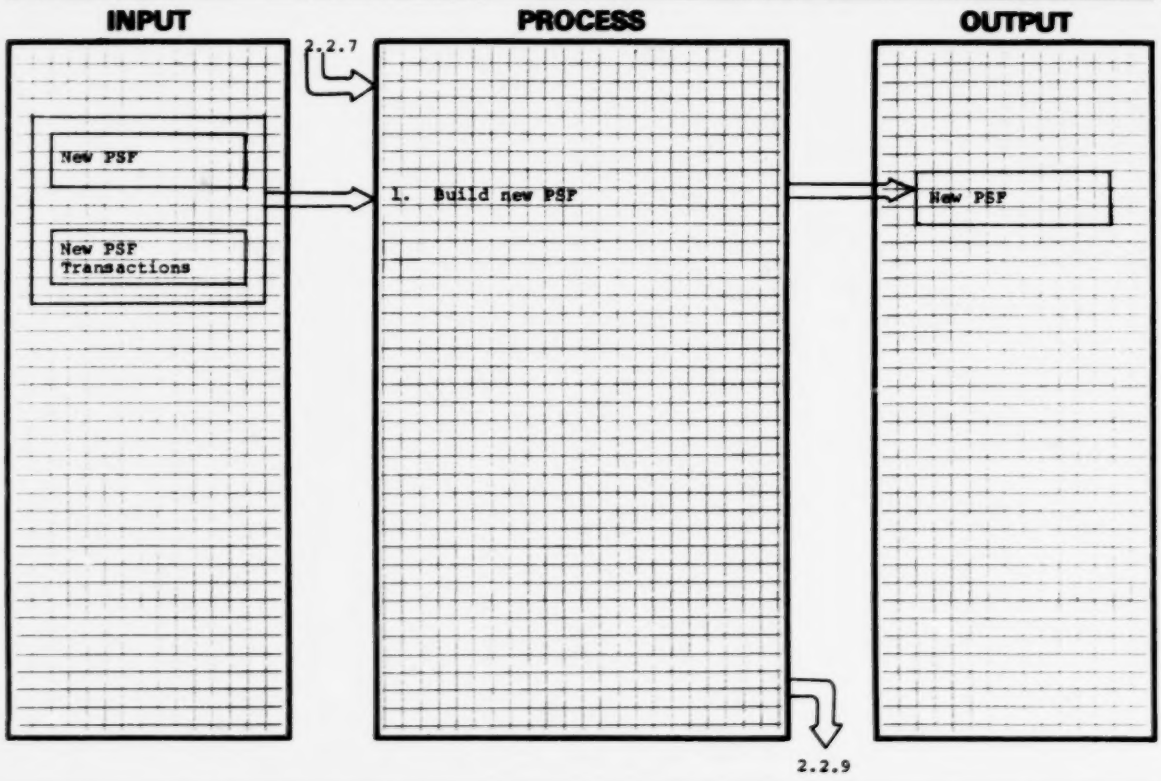
Diagram No.: 2.2.7 **Description:** Produce the Standard Update Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Update Statistics Report is always produced. The following two formats may be used: a. The Standard Update Statistics Report contains: 1. Totals which were accumulated during the update process: (a) number of records originally on the file (b) number of acceptable transactions (c) number of error records counted (d) number of records modified on the file (e) number of new records added to the file (f) number of records deleted from the file (g) number of records currently on the file 2. The totals 'd' through 'g' are computed as a percent of 'a'. b. If any Processing Options records are in error, the record and associated error messages will be produced instead of the totals in 1.a.		WAQC010	103 203 MSIS. 300 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.2.8 **Description:** Build New PSF

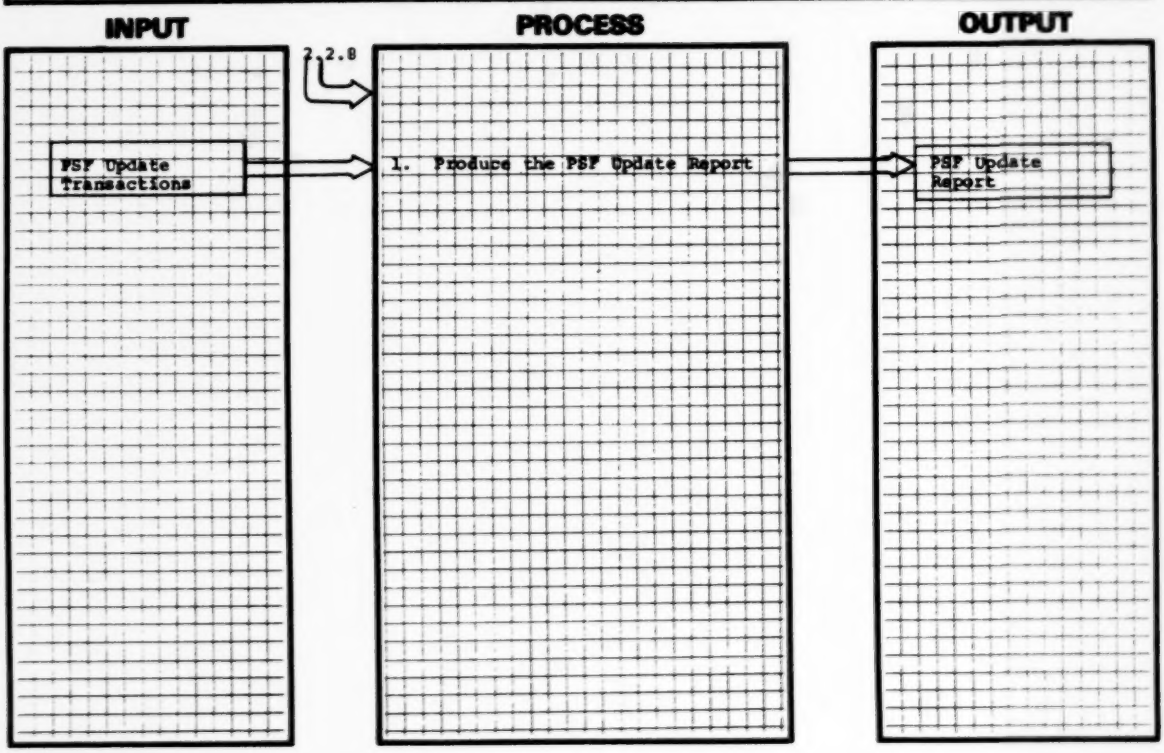


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The new Periodic Sample File (PSF) is built by copying the New PSF Transactions into the new PSF File following the first record. This first record was copied into the new PSF in HIPO 2.2.6.		WAQC010	251 252

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

Diagram No.: 2.2.9 **Description:** Produce PSF Update Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the PSF Update Report from the PSF Update Transactions passed from the update process in HIPO 2.2.6. This report lists the transactions added to and deleted from the Periodic Sample File (PSF) in this PSF processing run.		WAQC010	251 301

Water Quality Compliance Subsystem 2
Produce PSF Trans-action Report .3
Build Internal DET .1
Edit Processing Options .2
Build PSF Trans-action Sort File .3
Sort PSF Trans-action Sort File .4
Produce PSF Input Trans-action Report .5

VISUAL TABLE OF CONTENTS

2 Water Quality Compliance Subsystem
2.3 Produce Periodic Sample File (PSF) Transaction Report
2.3.1 Build Internal Data Element Table (DET)
2.3.2 Edit Processing Options
2.3.3 Build Periodic Sample File (PSF) Transaction Sort File
2.3.4 Sort Periodic Sample File (PSF) Transaction Sort File
2.3.5 Produce Periodic Sample File (PSF) Input Transaction Report

LEGEND

Data Flow

Entries & Exits

Multiple I/O Reference

Diagram Type: VTOC

Diagram No: 2.3

Subsystem: Water Quality Compliance

Description: Produce Periodic Sample File (PSF) Transaction Report

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC011
DATE: November 23, 1976

I. OBJECTIVE:

The objective of this program is to produce the Periodic Sample File (PSF) Input Transaction Report sorted in a user-defined sequence from the PSF Input Transaction File which was passed from WAQC010.

The PSF Transaction Report is a listing of the record images of input transactions to the PSF Update program, WAQC010, with an indication of whether a given transaction was accepted or rejected.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options	PSFI-PROC-RECORD	WAQC.111	WAQC.214
2.	Sort Processing Options	PSFI-SORT-RECORD	WAQC.104	WAQC.204

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Sort Sequence Report	MSIS.309 MSIS.311
2.	PSF Input Transaction Report	WAOC.303

C. Turnaround Documents

Not Applicable

IV. FUNCTIONS:

1. Build an internal Data Element Table (DET) to be used in editing the 'SORT' Processing Options and in building the sort key.

2. Edit the Processing Options for errors. Edit the 'PROC' record for date errors. Edit the 'SORT' record(s) for sequence errors, mnemonic name errors, and sort-mode errors. Any errors will produce messages on the PSF Input Transaction Report and will terminate processing.

3. Build the Periodic Sample File (PSF) Transaction Sort File by constructing sort keys using the 'SORT' Processing Options and the PSF Transaction File records. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the PSF Transaction File.

4. Sort the PSF Transaction Sort File from step 3 into the sequence established by the 'SORT' Processing Options or the sequentially created sort key.

5. Produce the PSF Input Transaction Report from the sorted PSF Transaction Sort File from step 4.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options
2. Sort Options

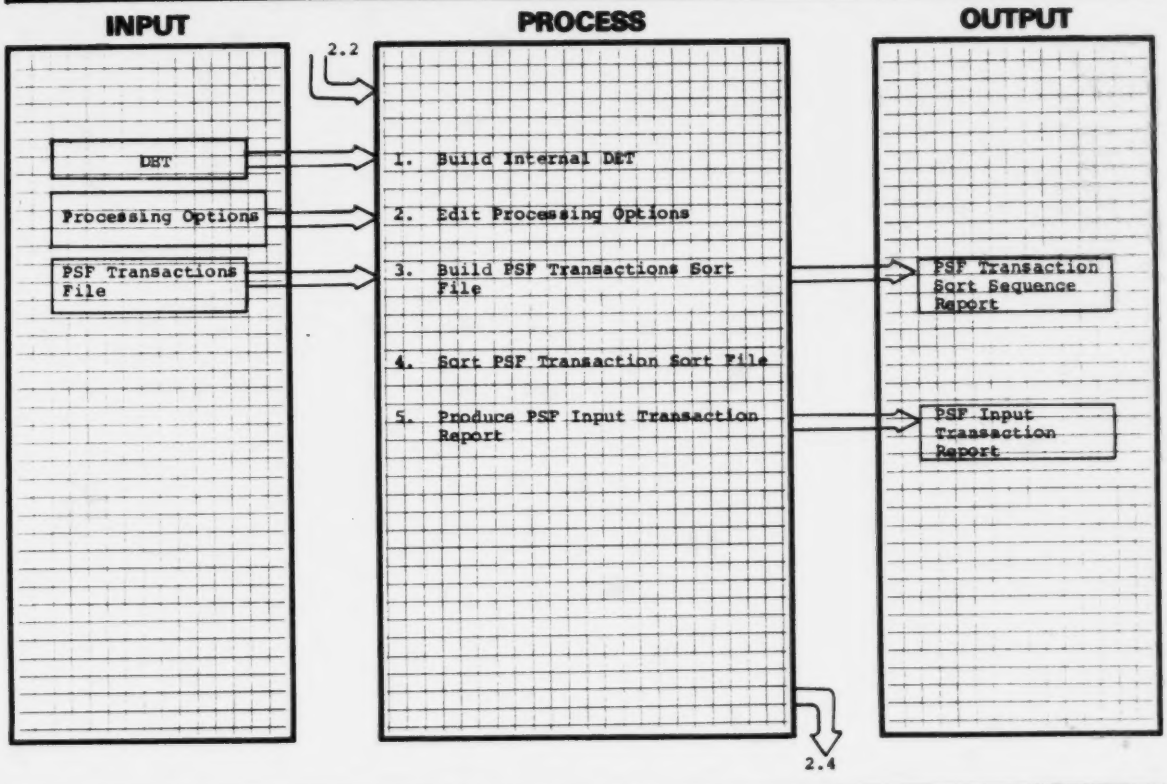
B. Data Element Description:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

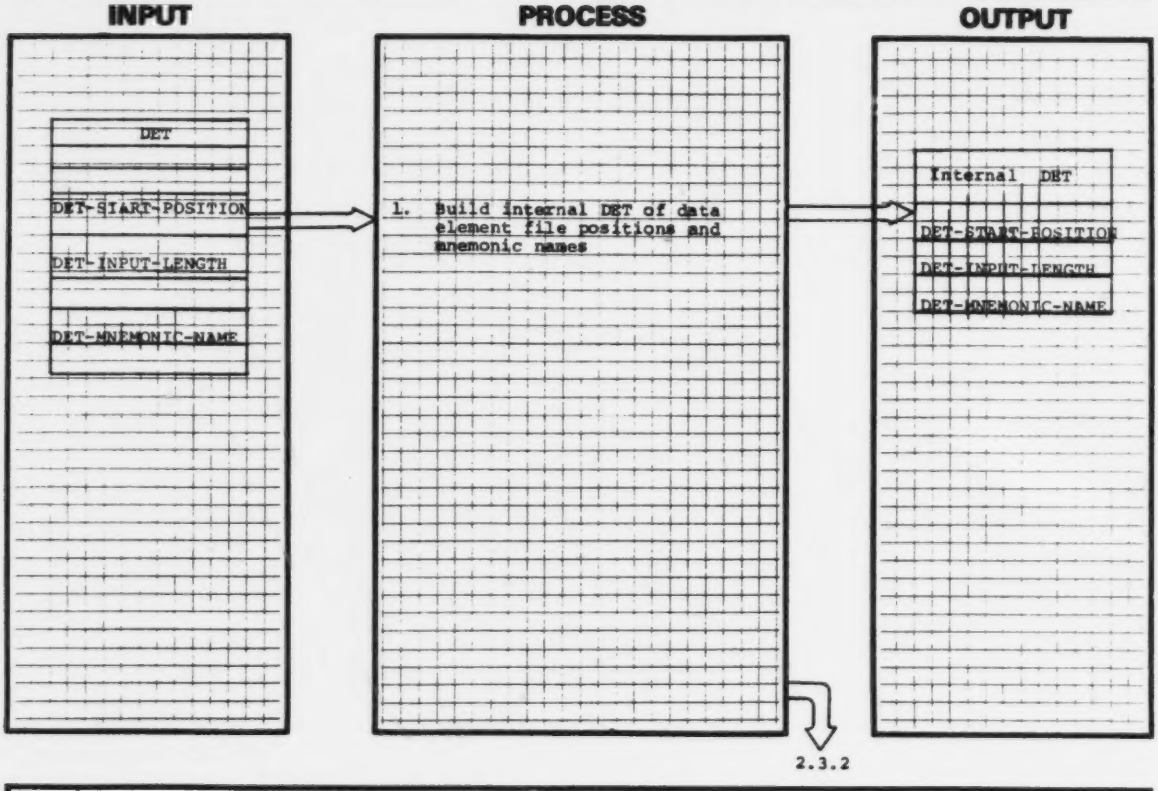
Diagram No.: 2.3 **Description:** Produce PSF Transaction Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Data Element Table (DET) from the DET for the purpose of editing the 'SORT' Processing Options and building a sort key.	2.3.1	WAQC011	
2	Edit both the 'PROC' and 'SORT' Processing Options. If any processing option is in error, program execution is terminated after editing all the processing options.	2.3.2	WAQC011	
3	The Periodic Sample File (PSF) Transaction Sort File is built from the PSF Transaction File by the addition of the 30-position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 2.	2.3.3	WAQC011	
4	The PSF Transaction Sort File is sorted into the user-defined sequence for producing the PSF Input Transaction Report.	2.3.4	WAQC011	
5	The PSF Input Transaction Report is produced from the sorted PSF Transaction Sort File from Step 4. This report lists error-free and erroneous input transactions to the Periodic Sample File (PSF) and indicates the erroneous transactions by an asterisk (*) on the report.	2.3.5	WAQC011	

MODEL STATE INFORMATION SYSTEM

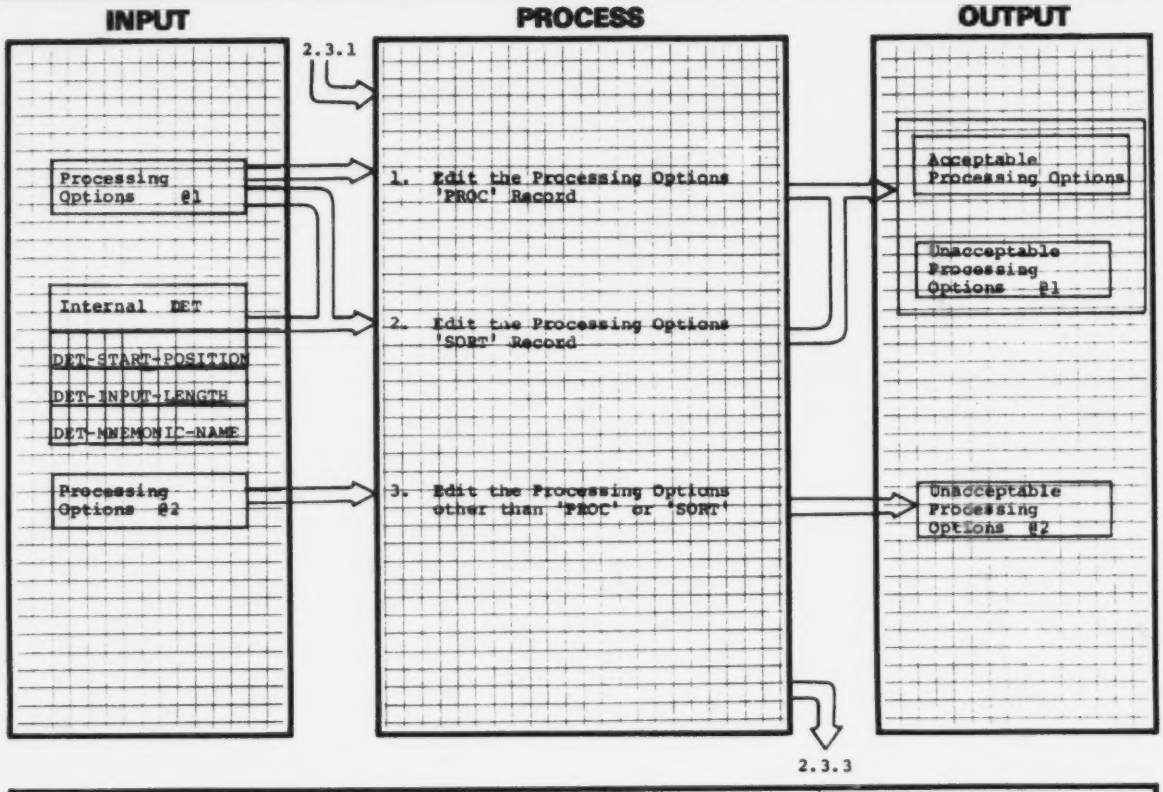
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.3.1 **Description:** Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of PS. Only the file start position, data element length, and data element mnemonic are used.		WAQC011	MSIS. 201 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.3.2 **Description:** Edit Processing Options

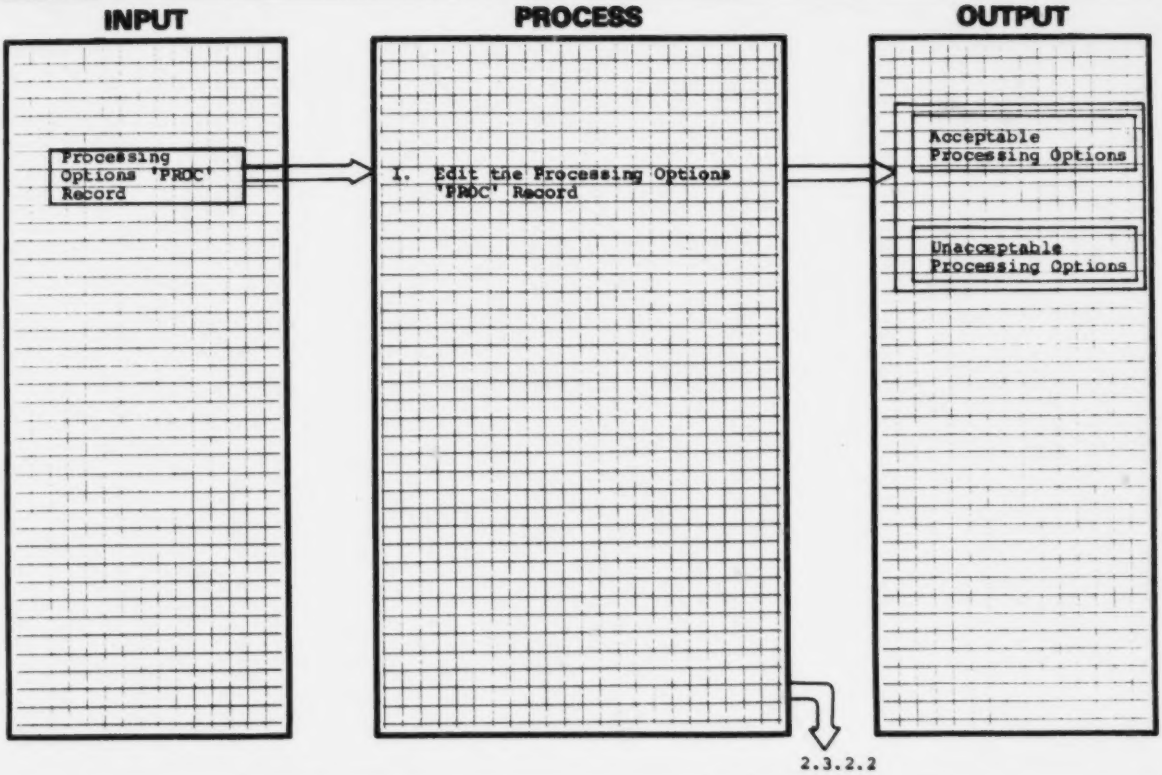


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options 'PROC' record for valid date and no more than one 'PROC' record.	2.3.2.1	WAQC011	
2	Edit the Processing Options 'SORT' record for valid sort sequence, mnemonic name, and sort mode.	2.3.2.2	WAQC011	
3	Edit for Processing Options other than 'PROC' or 'SORT'. If found, it is an error.	2.3.2.3	WAQC011	
	Note: All errors produce messages on the PSF Transactions Report and program execution is terminated.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1

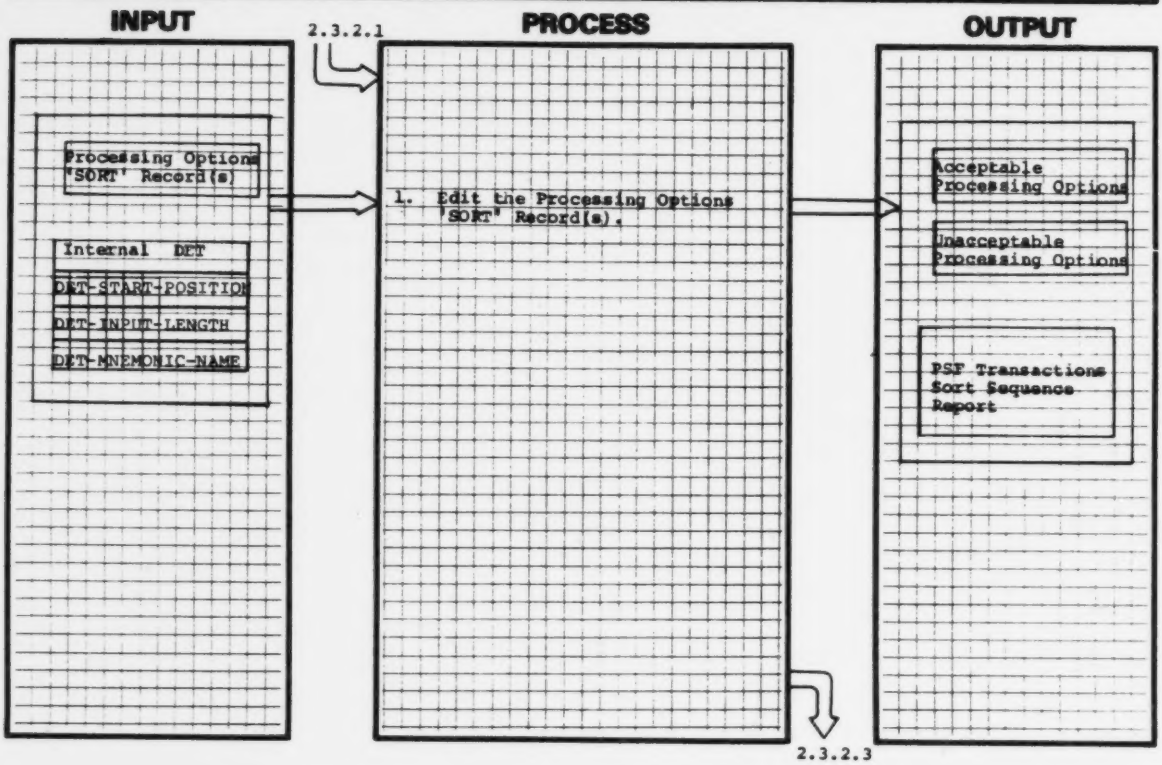
Diagram No.: 2.3.2.1 **Description:** Edit 'PROC' Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options record is identified by 'PROC' in positions 1-4. a. If 'PROC' is not present, move message 'ERROR - NO PROCESSING OPTION RECORDS WERE PROVIDED' to error message area and terminate processing. If more than one 'PROC' record is present, use the first 'PROC' record and reject all others, moving message 'ERROR TWO PROC RECORDS SUPPLIED' to error message area. b. If positions 5-10 do not contain a valid date, move message 'ERROR - PROC RECORD CONTAINS AN INVALID DATE' to error message area and terminate processing. All fields are edited even though a previous error has been detected. If an error was detected, an image of the Processing Options card and all associated error messages are to be printed on the PSF Input Transaction Report.		WAQC011	111 214 303

MODEL STATE INFORMATION SYSTEM

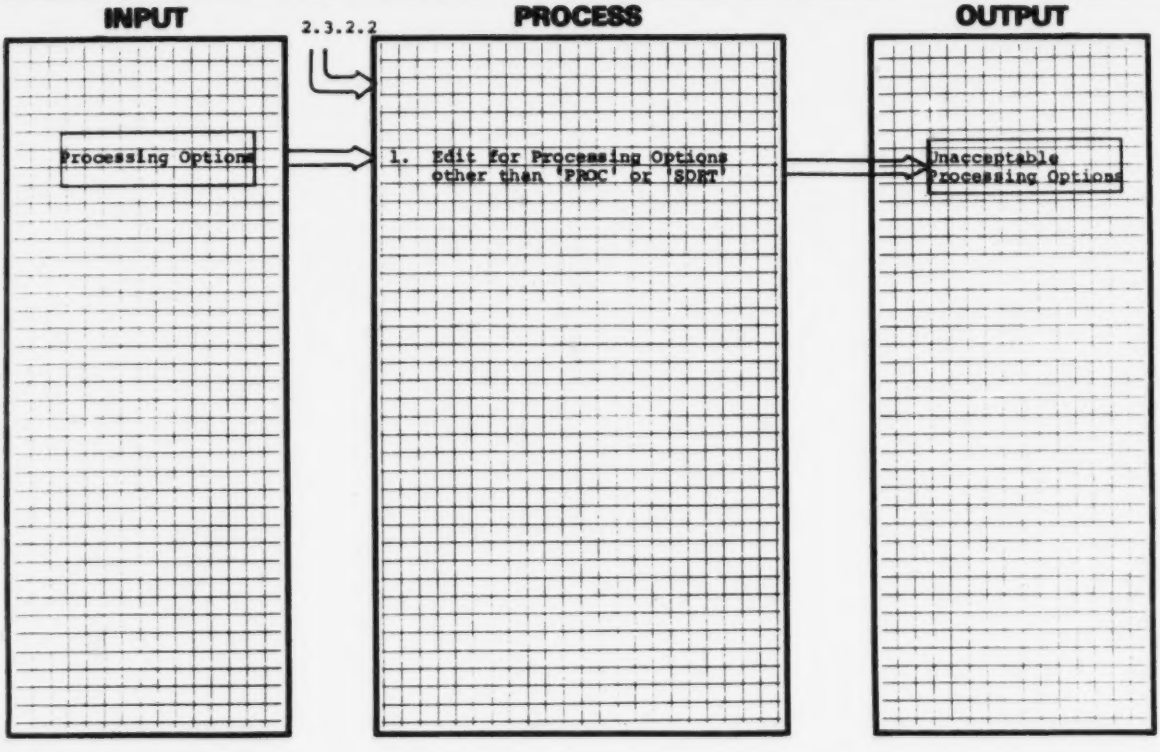
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.3.2.2 **Description:** Edit 'SORT' Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) with 'SORT' in positions 1-4 of the record as follows: a. PSFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the PSFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, PSFI-SORT-MNEMONIC and PSFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. PSFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the PSFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If PSFI-SORT-SEQUENCE is non-blank, then PSFI-SORT-MNEMONIC must be present. c. PSFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' (ascending) or 'D' (descending). If PSFI-SORT-SEQUENCE is non-blank, then PSFI-SORT-MODE must be present. As each PSFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the PSF Transaction Sort Sequence Report and processing will be terminated.		WAQC011	104 204 303

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.3.2.3 **Description:** Edit for other Processing Options

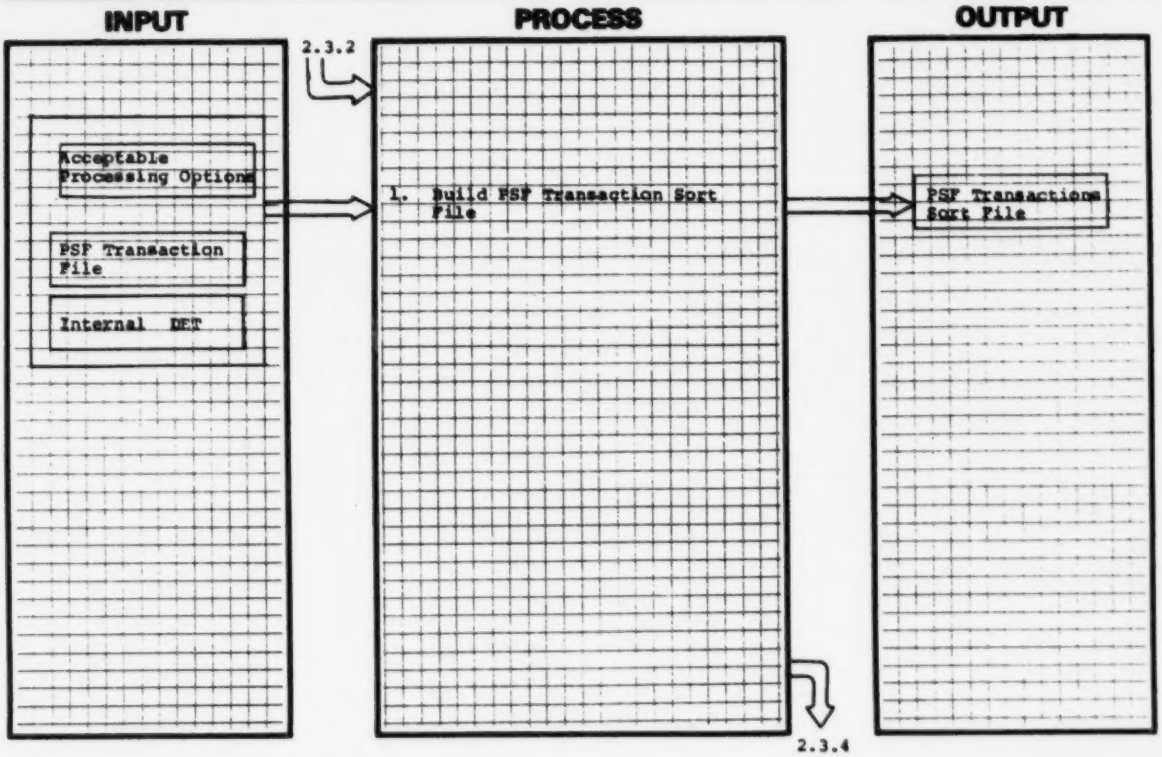


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'PROC' or 'SORT' in positions 1-4. If found, the message 'ERROR - NO PROCESSING OPTION RECORDS WERE PROVIDED' is moved to the error message area and processing is terminated. If an error has been detected, an image of the Processing Options record and all associated error message are to be printed on the PSF Transactions Report.		WAQC011	303

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 12/17/76 Page: 1 of 2

Diagram No.: 2.3.3 Description: Build PSF Transaction Sort File

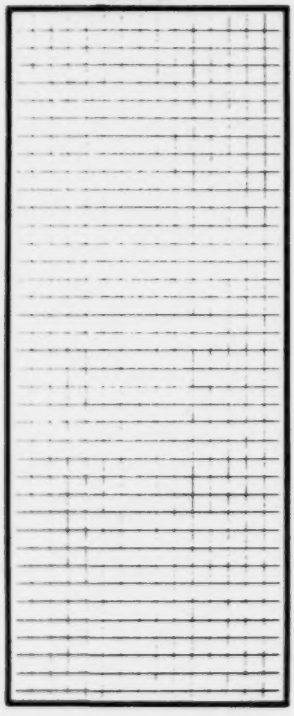


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the PSF Transaction File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) PSF Transaction File record as an array of one character values. b. Match the PSFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the PSF Transaction File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the PSF Transaction File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 (2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no		WAQC011	104 204 MSIS. 201

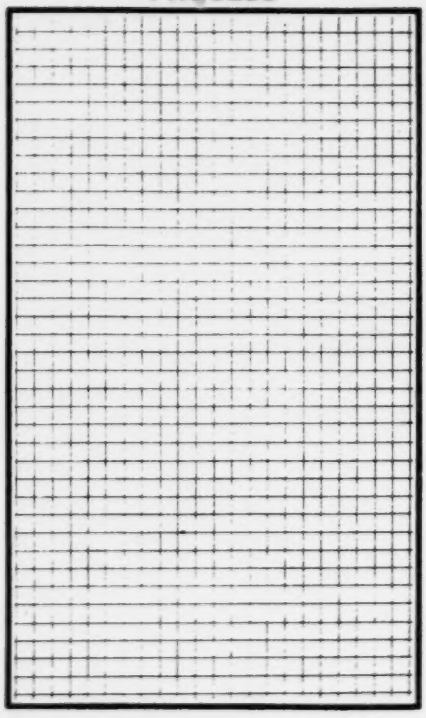
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 2 of 2
Diagram No.: 2.3.3 **Description:** Build PSF Transaction Sort File

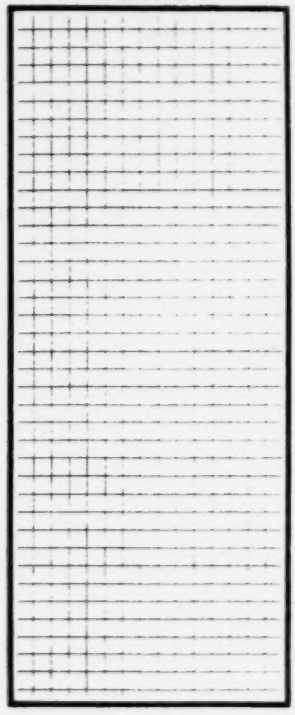
INPUT



PROCESS



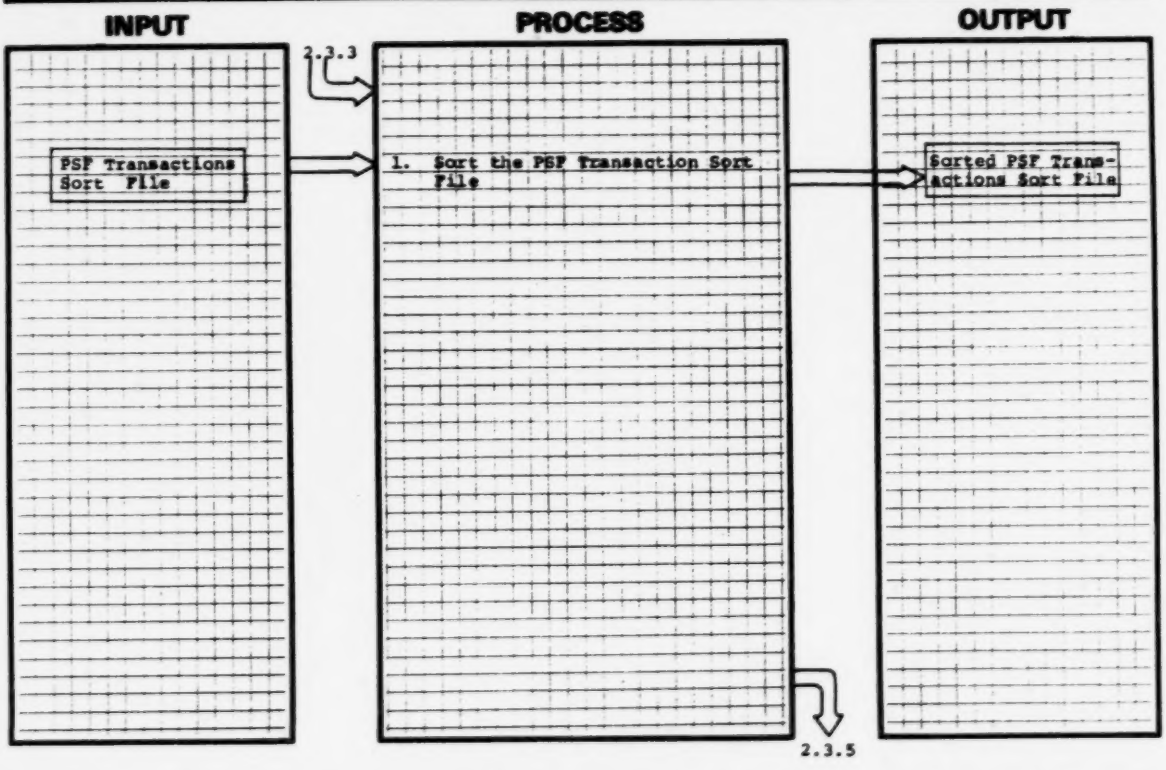
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	unique starting position. In this case all possible values in the array must be checked as follows: (a) If the PSFI-SORT-MODE = 'A' (ascending), the lowest value of the data element must be used in building the sort key. (b) If the PSFI-SORT-MODE = 'D' (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the PSFI-SORT-MODE = 'A' (ascending), move the value obtained in c. to the proper location in the sort key. If the PSFI-SORT-MODE = 'D' (descending), redefine the data element value obtained in c. as binary, subtract it from the highest number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the PSFI-SORT-SEQUENCE. NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000099999 30 positions			

MODEL STATE INFORMATION SYSTEM

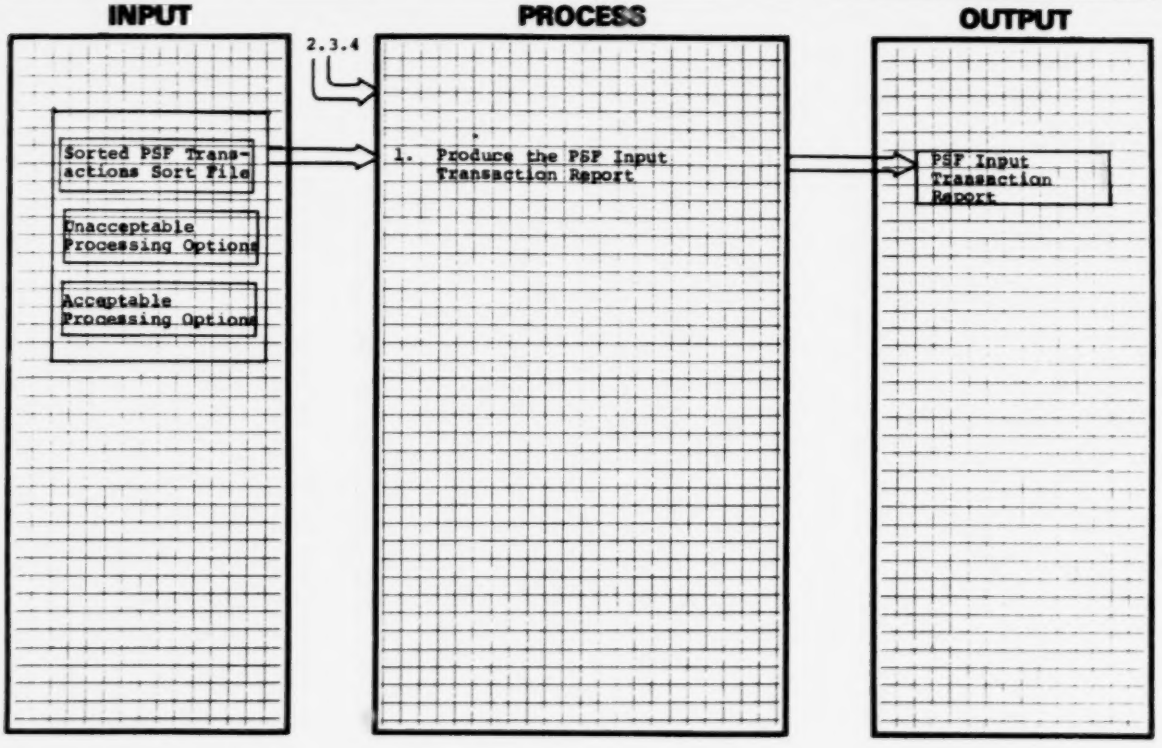
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.3.4 **Description:** Sort PSF Transaction Sort File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the PSF Transaction File in ascending sequence according to the thirty position sort key.		WAQC011	104 204

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/17/76 **Page:** 1 of 1
Diagram No.: 2.3.5 **Description:** Produce PSF Transaction Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the PSF Input Transaction Report from one of two files: a. If there was a user-defined sort, use the Sorted PSF Transaction Sort File from HIPO 2.3.4. The Report will then be produced in the sequence designated on the Processing Options 'SORT' record(s). b. If there was no user-defined sort, use the PSF Transaction File passed from WAQC010. The Report will then be produced in the same sequence as the file, that is, the sequence in which the file was created in WAQC010. Note: If there were errors in the Processing Options, only error messages will be produced on the PSF Input Transaction Report instead of the normal report.		WAQC011	303 MSIS. 309

Subsystem: Water Quality Compliance

Description: Update Sample Analysis File (SAF)

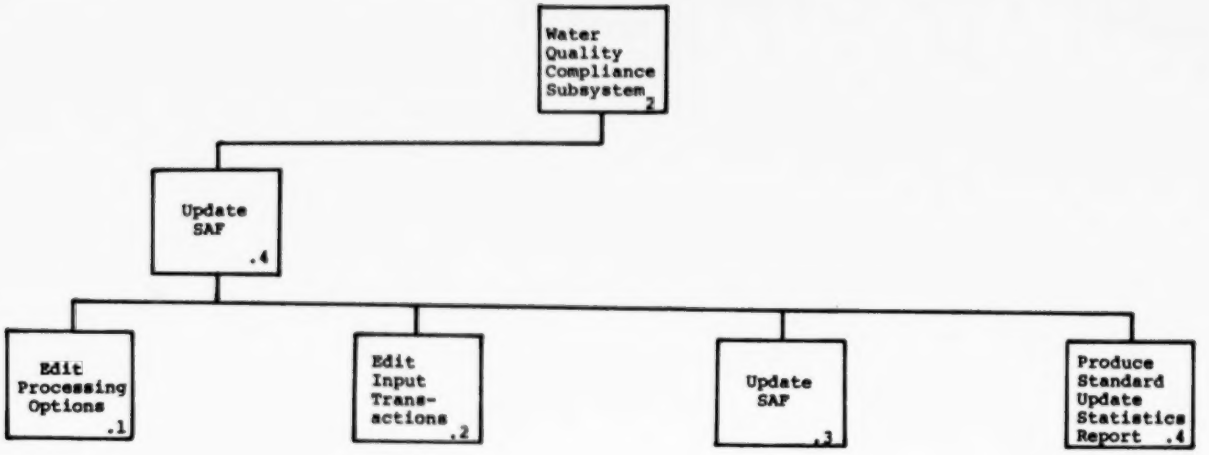
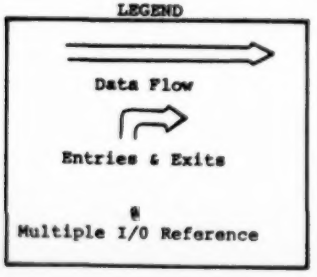

Water Quality Compliance Subsystem 2
Update SAF .4
Edit Processing Options .1
Edit Input Trans-actions .2
Update SAF .3
Produce Standard Update Statistics Report .4

Diagram Type: VTOC

Diagram No: 2.4

LEGEND



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2 Water Quality Compliance Subsystem
2.4 Update Sample Analysis File (SAF)
2.4.1 Edit Processing Options
2.4.2 Edit Input Transactions
2.4.3 Update The Sample Analysis File (SAF)
2.4.4 Produce The Standard Update Statistics Report

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC020
DATE: December 30, 1976

I. OBJECTIVE:

The objective of this program is to edit sample deletion transactions and to delete specified records from the Sample Analysis File (SAF). Deleted records are written on the SAF Deletion Report while the remaining records are written on the Updated SAF.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sample Deletion Transactions	SAFI-DELT-RECORD	WAQC.110	WAQC.210
2.	Sample Analysis File	SAF-RECORD		WAQC.254

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	SAFI-PROC-RECORD	WAQC.103	WAQC.209

C. Turnaround Documents:

Not applicable

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Sample Analysis File	SAF-RECORD	WAQC.254
2.	Standard Error File	SEF-RECORD MSI-PROC-SEF-RECORD	MSIS.207 MSIS.208

B. Report Layouts:

	NAME	EXHIBIT FORM
1.	Sample Analysis File Deletion Report	WAQC.304
2.	Standard Update Statistics Report	MSIS.300 MSIS.309

C. Turnaround Documents:

Not applicable

IV. FUNCTIONS:

1. Edit the Processing Options for errors. The 'PROC' record is edited for date errors and for invalid Standard Error Processing Options. Any error will produce messages on the Standard Update Statistics Report and cause processing to terminate.

2. Edit the input transaction records for valid entries. Errors are written to the Standard Error File (SEF).

3. Update the Sample Analysis File (SAF) by deleting records as indicated by the Transaction Code on the transaction. Records with no match on the SAF will be written on the SEF. The SAF Deletion Report showing deleted records is produced.

4. Produce the Standard Update Statistics Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

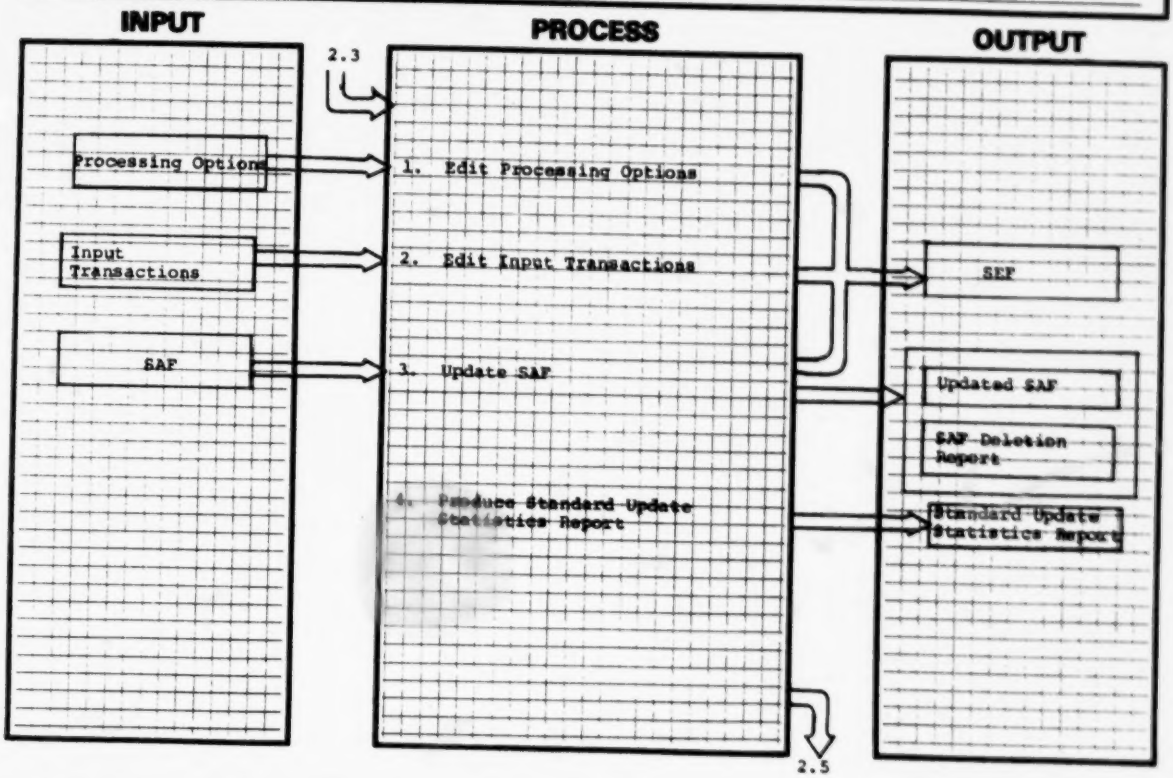
1. Processing Options
2. Sample Deletion Transactions

B. Data Element Descriptions:

1. Sample Analysis File (SAF)

MODEL STATE INFORMATION SYSTEM

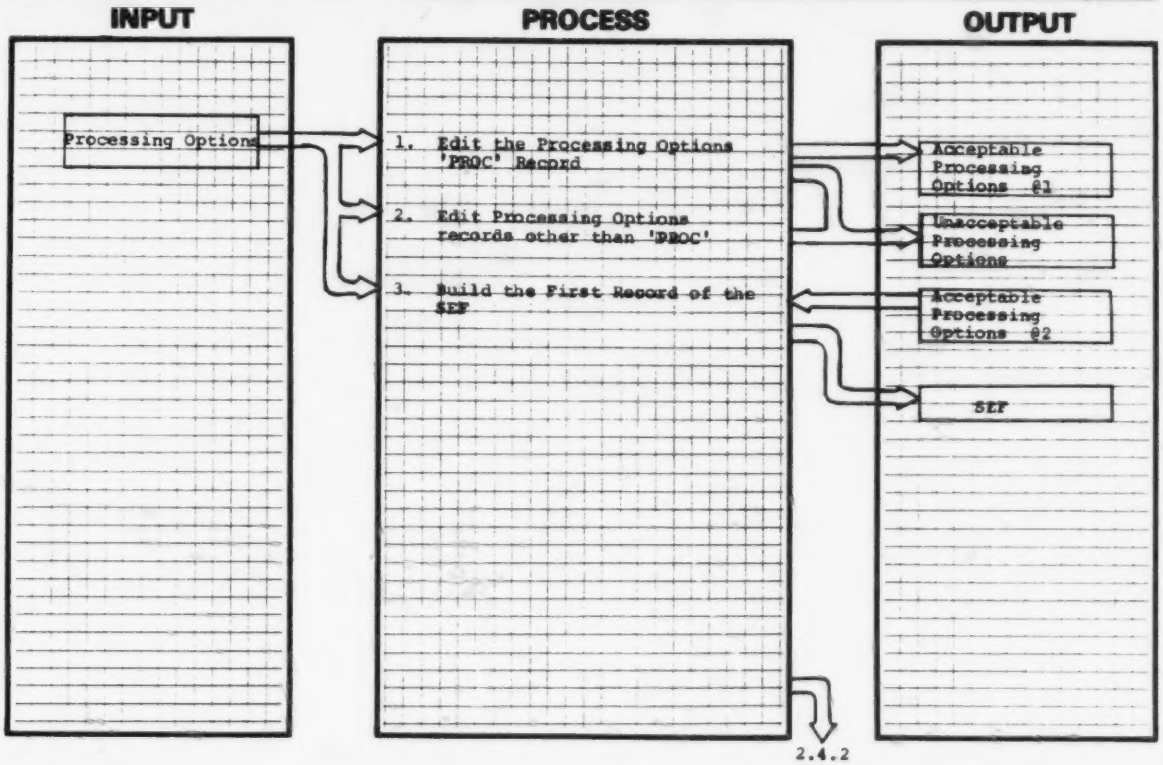
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12/30/76 **Page:** 1 of 1
Diagram No.: 2.4 **Description:** Update SAF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the 'PROC' Processing Options and build the first record of the Standard Error File (SEF). If any Processing Options records are in error, processing terminates.	2.4.1	WAQC020	
2	Edit the input transactions for valid entries. Errors are written to the SEF.	2.4.2	WAQC020	
3	Update the Sample Analysis File (SAF) by deleting records that match the sample deletion transactions. The deleted records are written to the SAF Deletion Report and the remaining records to the updated SAF.	2.4.3	WAQC020	
4	Produce the Standard Update Statistics Report. Note: The SAF will be in the sequence of Sample Time, within Sample Date, within Sample Type, within Sample ID Code, within Contaminant ID, within Public Water System ID. Therefore, the input transactions will be sorted in the sequence of Sample Key, within Contaminant ID, within Public Water System ID. Note: Error codes are located in the Data Element Dictionary (DED).	2.4.4	WAQC020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/30/76 **Page:** 1 of 2
Diagram No.: 2.4.1 **Description:** Edit Processing Options

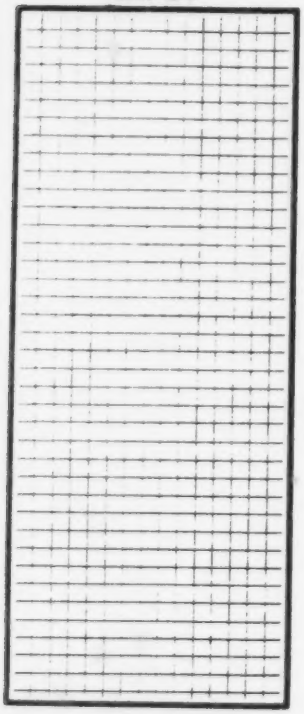


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Records with 'PROC' in positions 1-4 of the record as follows: a. If 'PROC' is not present, move message 'ERROR - NO PROCESSING OPTIONS RECORDS WERE PROVIDED' to error message area. If more than one 'PROC' record is present, move message 'ERROR - TWO PROC RECORDS SUPPLIED' to error message area. b. If positions 5-10 do not contain a valid date, move message 'ERROR - PROC RECORD CONTAINS AN INVALID DATE' to error message area. c. If position 11 does not contain a 'Y' or 'N', move message 'ERROR - PROC RECORD CONTAINS INVALID ERROR FILE CODE' to the error message area. d. If position 12 does not contain a 'Y' or 'N', move message 'ERROR - PROC RECORD CONTAINS INVALID DATA ELEMENT PRINT CODE' to the error message area. All fields are edited even though a previous error has been detected.		WAQC020	103 209 MSIS. 208 MSIS. 309
2	Edit the Processing Options record(s) for other than 'PROC' in positions 1-4. If found, the message 'ERROR - PROC TYPE NOT PROC' is moved to the error message area and processing terminates.		WAQC020	103 209 MSIS. 309

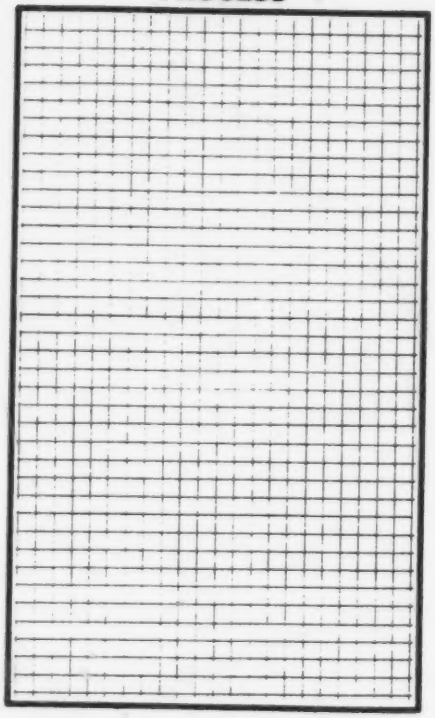
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/30/76 **Page:** 2 of 2
Diagram No.: 2.4.1 **Description:** Edit Processing Options

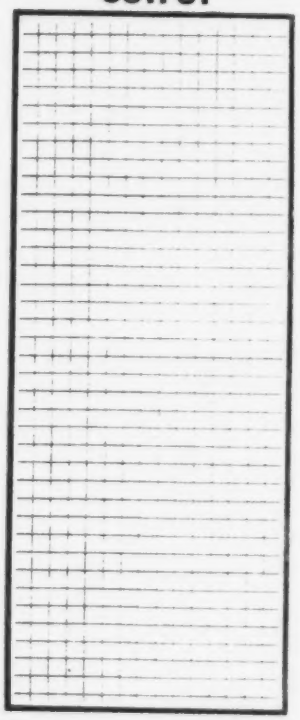
INPUT



PROCESS



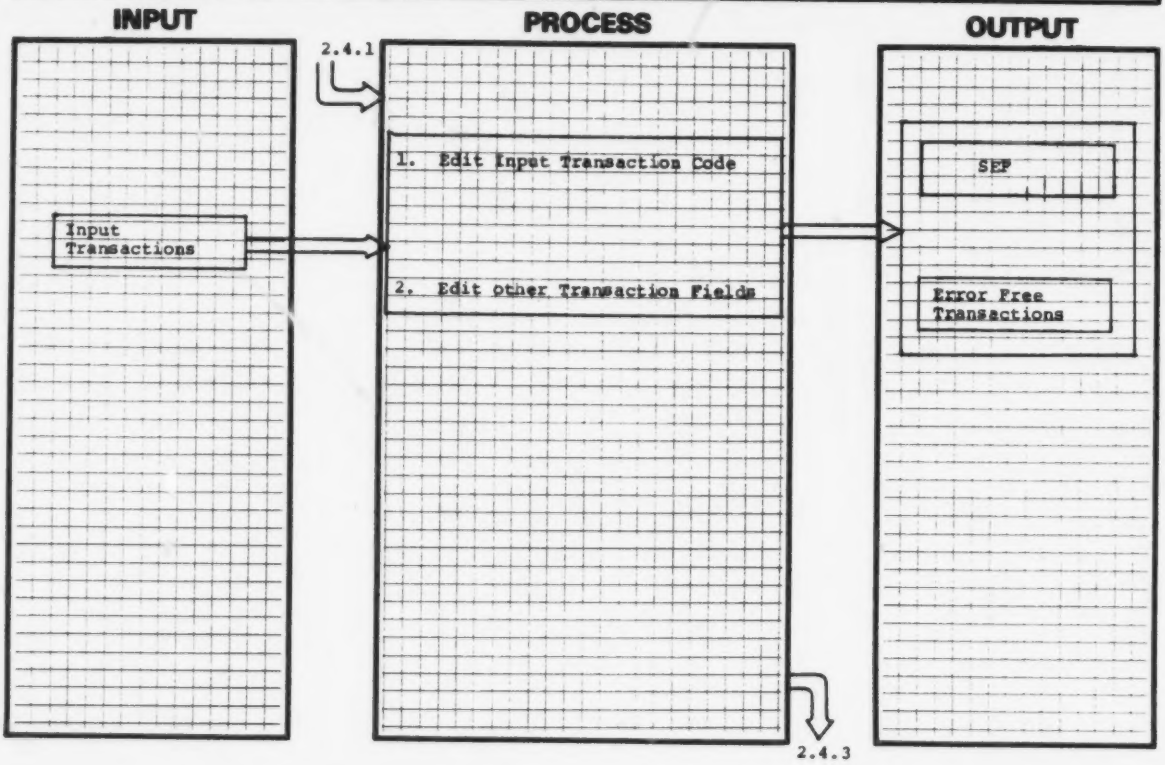
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	Build the first record of the Standard Error File (SEF). 'LOW VALUES' are placed in positions 1-4. The Processing Options date is placed in positions 5-10 and the Standard Error Processing Options in positions 11 and 12. If processing is to be terminated, the record is built and written with 'LOW VALUES' in positions 1-4 and blanks in the remainder of the record. Note: If an error was detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Update Statistics Report (HIPO 2.4.4) and program execution terminates.		WAQC020	MSIS. 208

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/30/76 **Page:** 1 of 1
Diagram No.: 2.4.2 **Description:** Edit Input Transactions

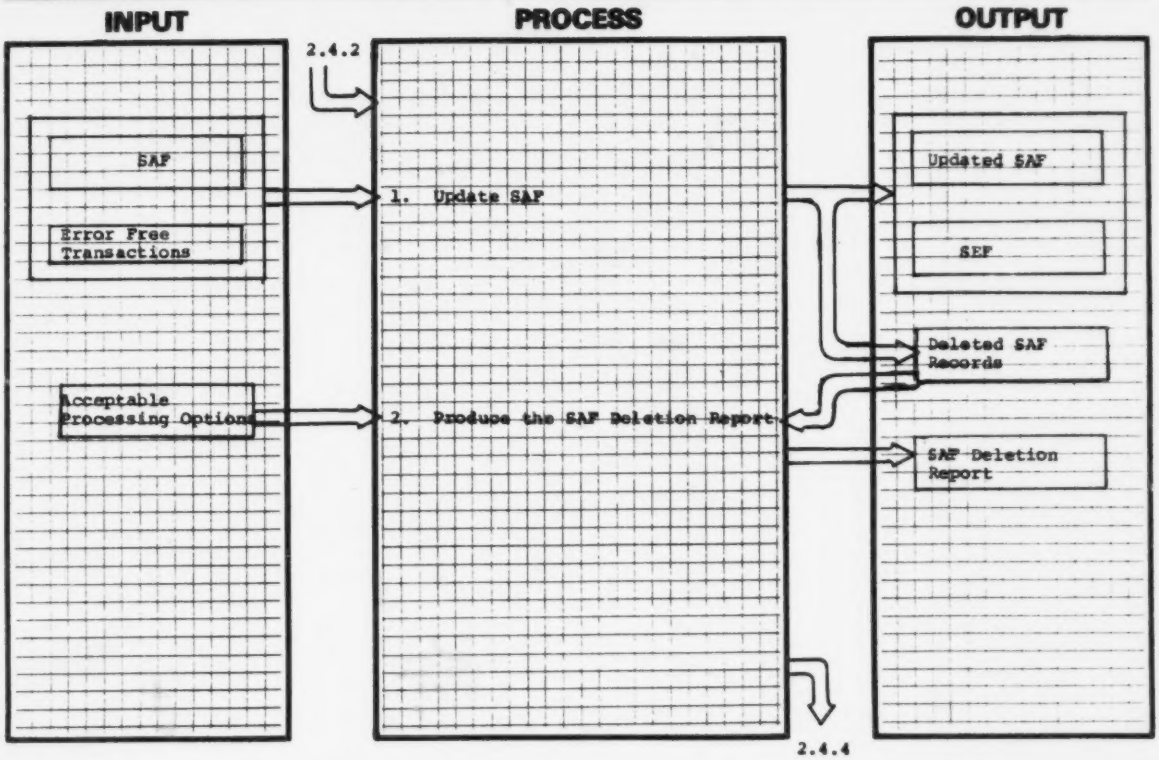


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Transaction code of the sample deletion Transaction record for an 01. If this code is not found, write the record to the Standard Error File (SEF) with an error code of 017 and process the next sample deletion Transaction record.		WAQC020	110 210 MSIS. 207
2	Edit the Public Water System (PWS) ID, Contaminant ID, Analysis Method, and Sample Key for syntax errors according to the Data Element Dictionary. If any error is found, write the record to the SEF. The input transactions completely free of errors will be applied to the Sample Analysis File (SAF).		WAQC020	110 210 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/30/76 **Page:** 1 of 1

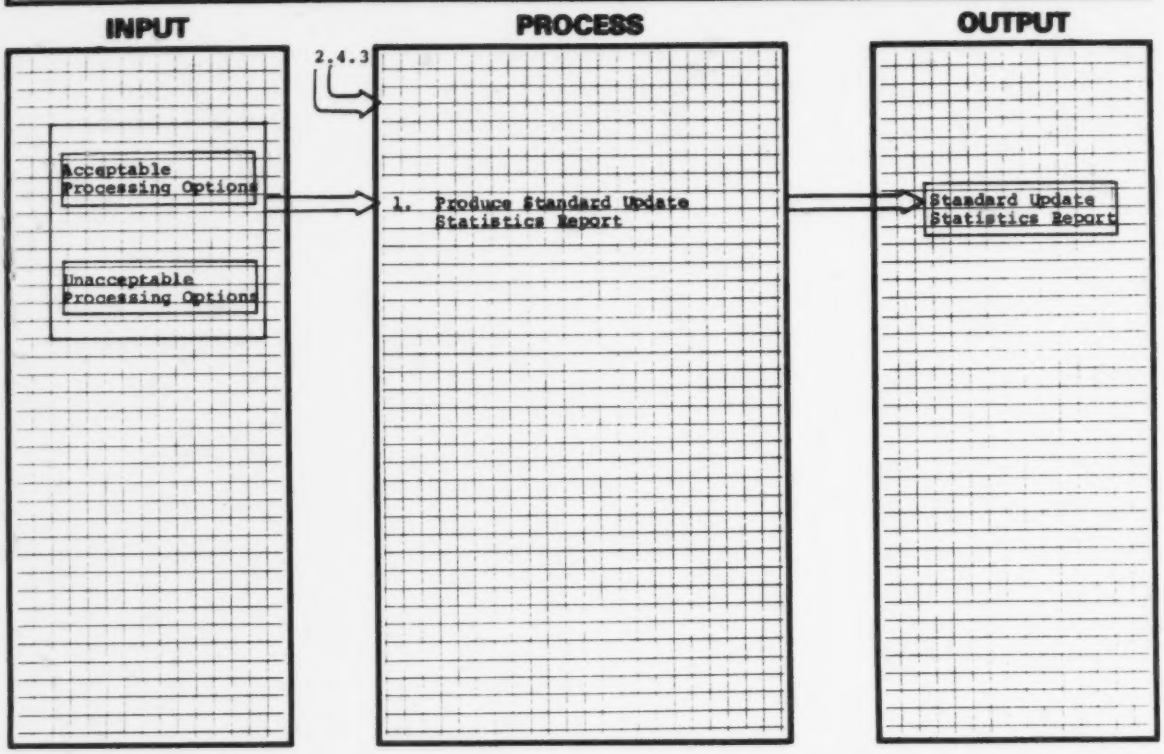
Diagram No.: 2.4.3 **Description:** Update Sample Analysis File (SAF)



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Records are deleted from the Sample Analysis File (SAF) if matching Public Water System (PWS) ID, Contaminant ID, Analysis Method, and Sample Key are found. Deleted records are written to the SAF Deletion Report and remaining records to the Updated SAF. If no matching record is found on the SAF, the sample deletion transaction is written to the Standard Error File (SEF).		WAQC020	210 254 MSIS. 207
2	Produce the SAF Deletion Report consisting of records deleted from the SAF. The report is printed in input order and contains the entire record with the record key separated from the rest of the record on the report.		WAQC020	304

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12/30/76 **Page:** 1 of 1
Diagram No.: 2.4.4 **Description:** Produce Standard Update Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Update Statistics Report is always produced. The following two formats may be used: a. The Standard Update Statistics Report contains: (1) Totals which were accumulated during the update process: (a) Number of records originally on the file (b) Number of acceptable transactions (c) Number of error records created (d) Number of records modified on the file (e) Number of new records added to the file (f) Number of records deleted from the file (g) Number of records currently on the file. (2) The totals (d) through (g) are computed as a percent of a. b. If any Processing Options records are in error, the record and associated error messages can be produced instead of or in addition to the totals in 1.a.		WAQC020	MSIS. 300 MSIS. 309

Water Quality Compliance Subsystem .2
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Edit For Compliance .2
Edit Processing Options .1
Build Compliance Files .1
Build Compliance Files .2
Produce Standard Error Report .3
Edit for Turbidity Violations .1
Edit for Inorganic Chemical Violations .2
Edit for Organic Chemical Violations .3
Edit For Bacteriological Violations .4
Edit For Gross Alpha Violations .5
Edit For Gross Beta Violations .6
Edit For Operation Report Violations .7
Merge Compliance Files .3
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Build New PSF .2
Build VIF Update Transactions File .3
Build PWF Update Transactions File .4
Produce Violations Reports .4
Produce MCL Violations Reports .1
Produce Turbidity MCL Violations Reports .1
Produce Chemical MCL Violations Reports .2
Produce Bacteriological MCL Violations Reports .3
Produce Radiological MCL Violations Reports .4
Produce Sampling Violations Reports .2
Produce Turbidity Sampling Violations Reports .1
Produce Chemical Sampling Violations Reports .2
Produce Bacteriological Sampling Violations Reports .3
Produce Radiological Sampling Violations Report .4
Produce Operation Report Violation Reports .3

Diagram Type: VTOC

Diagram No: 2.5

Subsystem: Water Quality Compliance

Description: Build Periodic Summary and Violations

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2.5 - Build Periodic Summary and Violations
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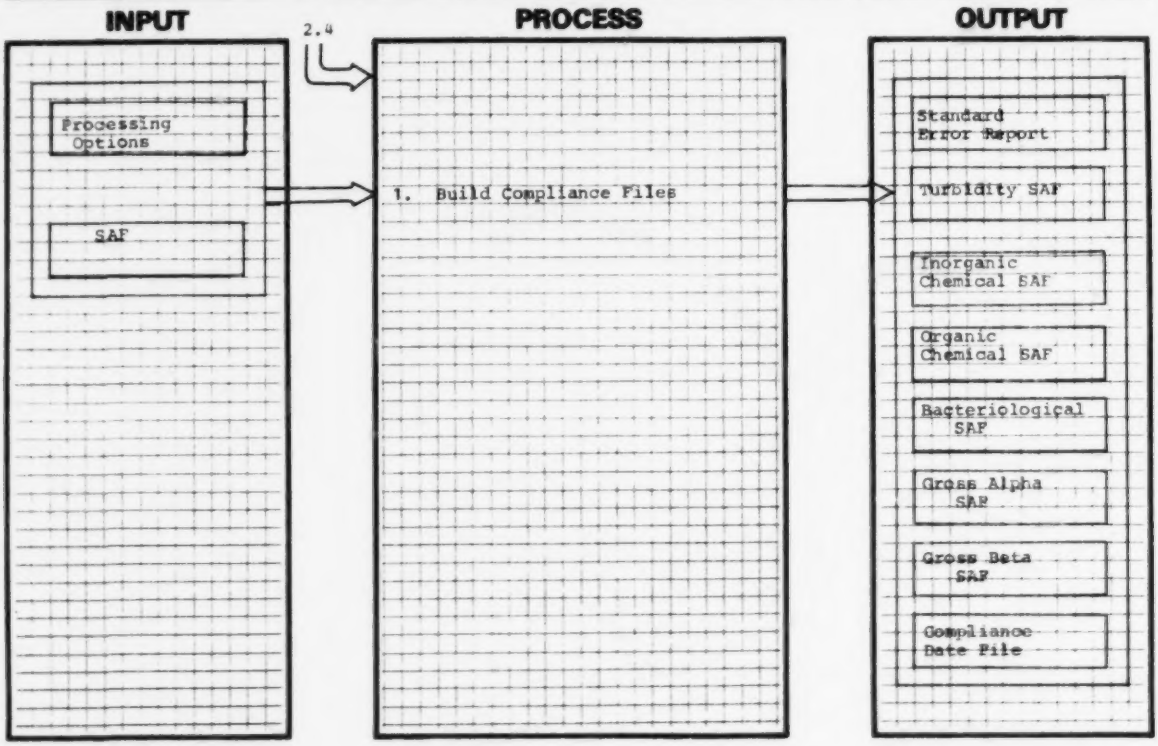
2.5.4.1.3 - Produce Bacteriological WCL Violations Reports
2.5.4.1.4 - Produce Radiological MCL Violations Reports
2.5.4.2.4 Produce Sampling Violations Reports
2.5.4.2.1 Produce Turbidity Sampling Violations Reports
2.5.4.2.2 - Produce Chemical Sampling Violations Reports
2.5.4.2.3 - Produce Bacteriological Sampling Violations Report
2.5.4.2.4 - Produce Radiological Sampling Violations Reports
2.5.4.3 - Produce Operation Report Violations Reports

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 **of** 5

Diagram No.: 2.5 **Description:** Build Periodic Summary and Violations

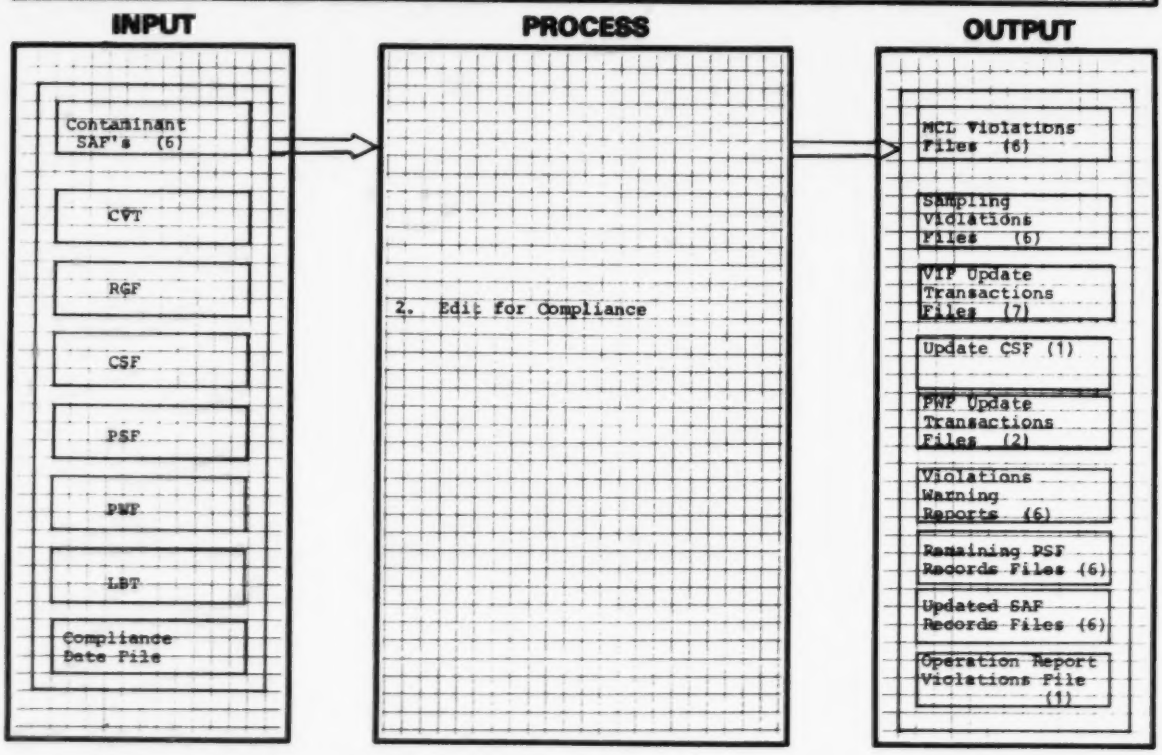


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build Compliance Files including six Contaminant Sample Analysis Files (SAF) and a Compliance Date File, each to be passed to subsequent compliance programs (WAQC031 - WAQC037). Processing Options are edited and used to build the header record of each file. The Contaminant SAF's are built from the SAF by selecting records by contaminant group and placing them in the appropriate file. Any edit errors are written on the Standard Error Report.	2.5.1	WAQC025	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 2 **of** 5

Diagram No.: 2.5 **Description:** Build Periodic Summary and Violations



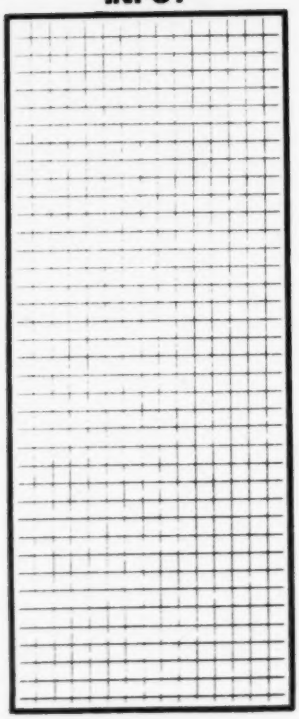
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	The Contaminant Sample Analysis Files (SAF) from Step 1 are edited against information from the Periodic Sample File (PSF), the Regulations File (RGF) and the Public Water File (PWF), for compliance with both the State and Federal Regulations. Several files are created from this compliance edit: a. Six Maximum Contaminant Level (MCL) Compliance Violations Files, one for each contaminant group in violation of MCL requirements which are to be used to produce the MCL Violation Reports in Step 4. b. Six Sampling Compliance Violations Files, one for each contaminant group in violation of sampling requirements which are to be used to produce the Sampling Violation Reports in Step 4. c. Six remaining PSF Records Files, one for each contaminant group of remaining sample records, which are to be used to build the new PSF in Step 3. d. Six Updated SAF Records Files, one for each contaminant group of sample records which are to be used to build the new SAF in Step 3. These files include records from the old SAF which are to remain on the new SAF. e. Seven Violations File (VIF) Update Transactions Files, one file for each contaminant group and one file for the Operations Report Violations, which are files of violation records to be input to the Violations File Update Process (Program WAQC120). The Laboratory Table (LBT) is used to provide Lab Name for the transaction records.	2.5.2	WAQC031 WAQC032 WAQC033 WAQC034 WAQC035 WAQC036 WAQC037	

MODEL STATE INFORMATION SYSTEM

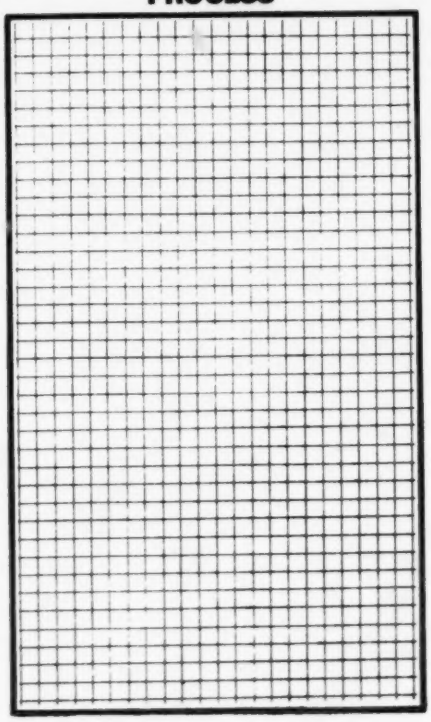
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 3 of 5

Diagram No.: 2.5 **Description:** Build Periodic Summary and Violations

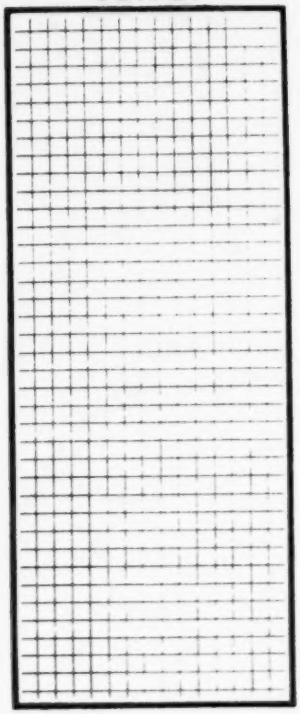
INPUT



PROCESS



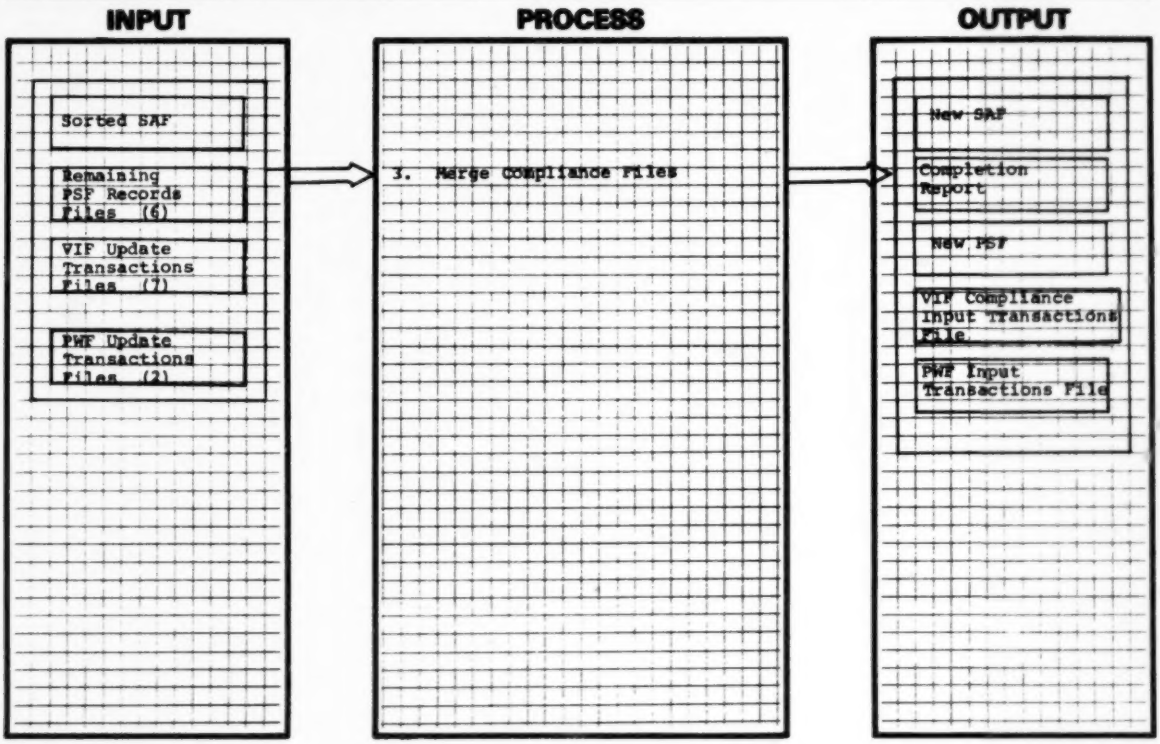
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	f. One Operations Report Compliance Violations File of those Public Water Systems in violation of the operation report submission requirements which is used to produce the Operation Report Violations Report in Step 4. g. One Warnings Report is produced from each of the seven compliance programs indicating situations that should be brought to the attention of the State and the Public Water Systems. h. The Compliance Status File (CSF) is updated during each run of the seven compliance programs. i. Two Public Water File (PWF) Update Transactions Files containing transactions issued to update chemical followup monitoring information in the PWF when a Public Water System is no longer in Maximum Contaminant Level Violation.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 4 of 5
Diagram No.: 2.5 **Description:** Build Periodic Summary and Violations

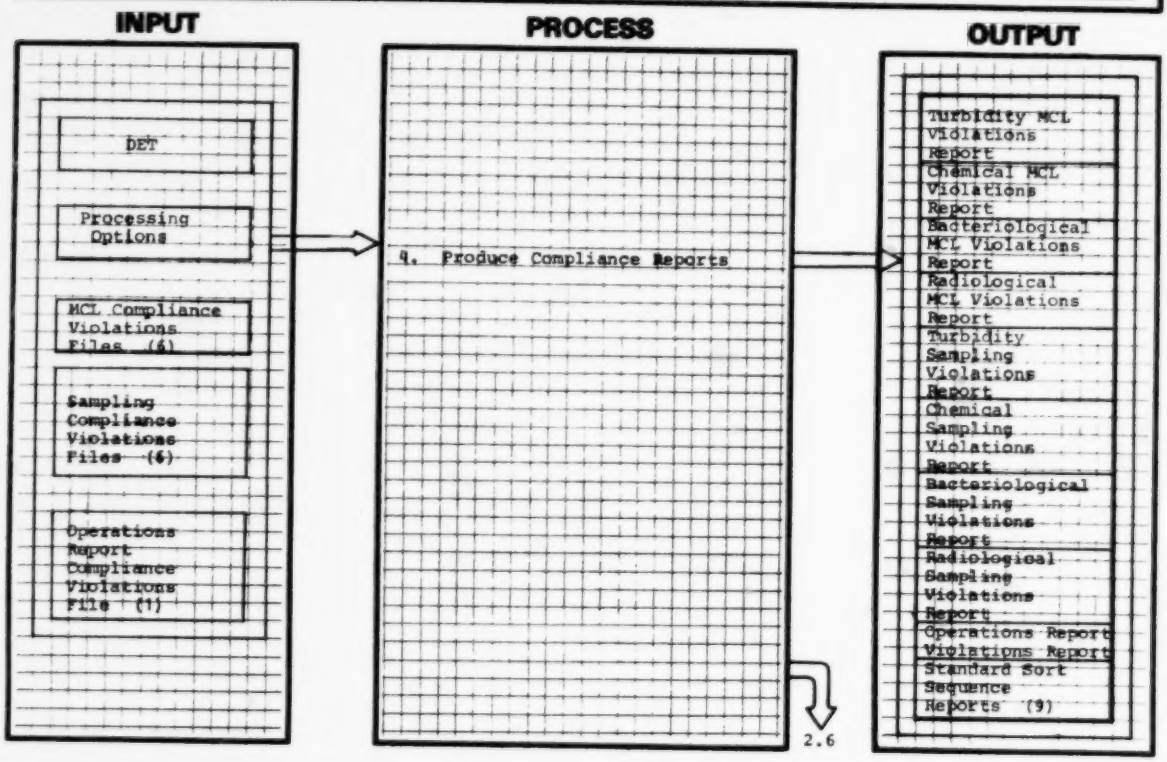


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	The files built in previous steps are merged and sorted to build the following new files and to produce the following reports: a. The six (6) Sample Analysis File (SAF) Header Records from the SAF produced by an external SORT/MERGE of the six (6) Updated SAF's are verified and removed to produce a new SAF. Accumulated statistics are written to the Completion Report. b. The six (6) remaining Periodic Sample File (PSF) Records Files are merged into one file and sorted to build a new PSF. Accumulated statistics are written to the Completion Report. c. The seven (7) Violations File (VIF) Update Transactions Files are merged to form the VIF Compliance Input Transactions File to be used as input to the Violations File Update Process (HIPO 2.7, Program WAQC120). Statistics are written to the Completion Report. d. The two (2) Public Water File (PWF) Update Transactions Files are merged to form the PWFI-WAQC-TRAN-10-FILE to be used as input to the PWF Update Process.	2.5.3	WAQC038	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 5 of 5

Diagram No.: 2.5 **Description:** Build Periodic Summary and Violations



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
4	The Compliance Reports are produced in nine (9) programs following two steps: a. The Processing Options for each program and the Data Element Table (DET) are used to build a sort key and to sort the input Violations File into the user-defined sequence. A Standard Sort Sequence Report is produced in each program, following the sort process. b. The sorted input Violations File is used in each program, to produce the appropriate Violations Reports.	2.5.4	WAQC040 WAQC041 WAQC050 WAQC051 WAQC060 WAQC061 WAQC070 WAQC080 WAQC090	

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC025
DATE: March 2, 1977

I. OBJECTIVES:

The objectives of this program are to edit the Processing Options for errors and subdivide the Sample Analysis File (SAF) into six contaminant SAF's.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Sample Analysis File	SAF-RECORD	WAQC.254

B. Processing Options Record:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options	SAFI-PROC-COMP-RECORD	WAQC.121	WAQC.218

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Turbidity Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
2.	Inorganic Chemical Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
3.	Organic Chemical Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254

	NAME	RECORD NAME	EXHIBIT LAYOUT
4.	Bacteriological Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
5.	Gross Alpha Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
6.	Gross Beta Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
7.	Operations Report Options	SAFI-HEDR-COMP-RECORD	WAQC.221

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Error Report	MSIS.309

IV. FUNCTIONS:

1. Edit the Processing Options for errors. Any error will cause processing to terminate and error messages to be written on the Standard Error Report. The header records for the contaminant Sample Anlysis Files (SAF's) are also built.

2. Build the remainder of the contaminant SAF's from the SAF if there were no Processing Options in error.

3. The Standard Error Report is produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options.

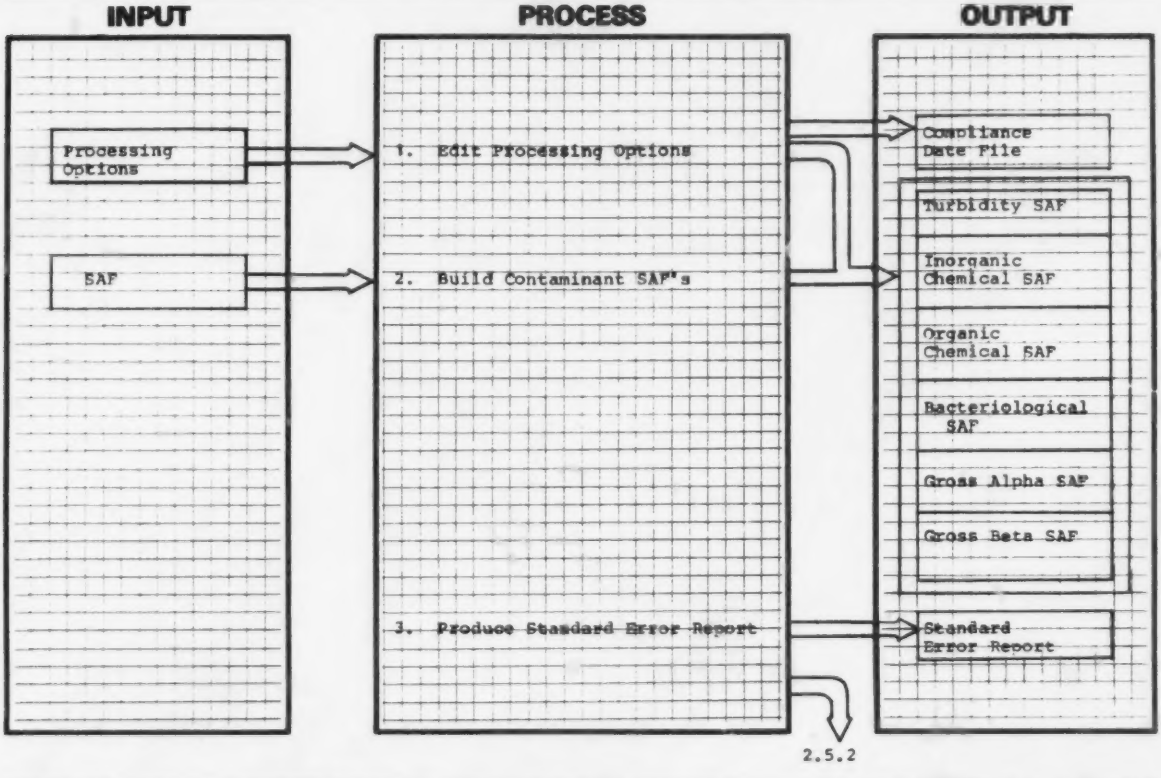
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 2.5.1 **Description:** Build Contaminant SAF's

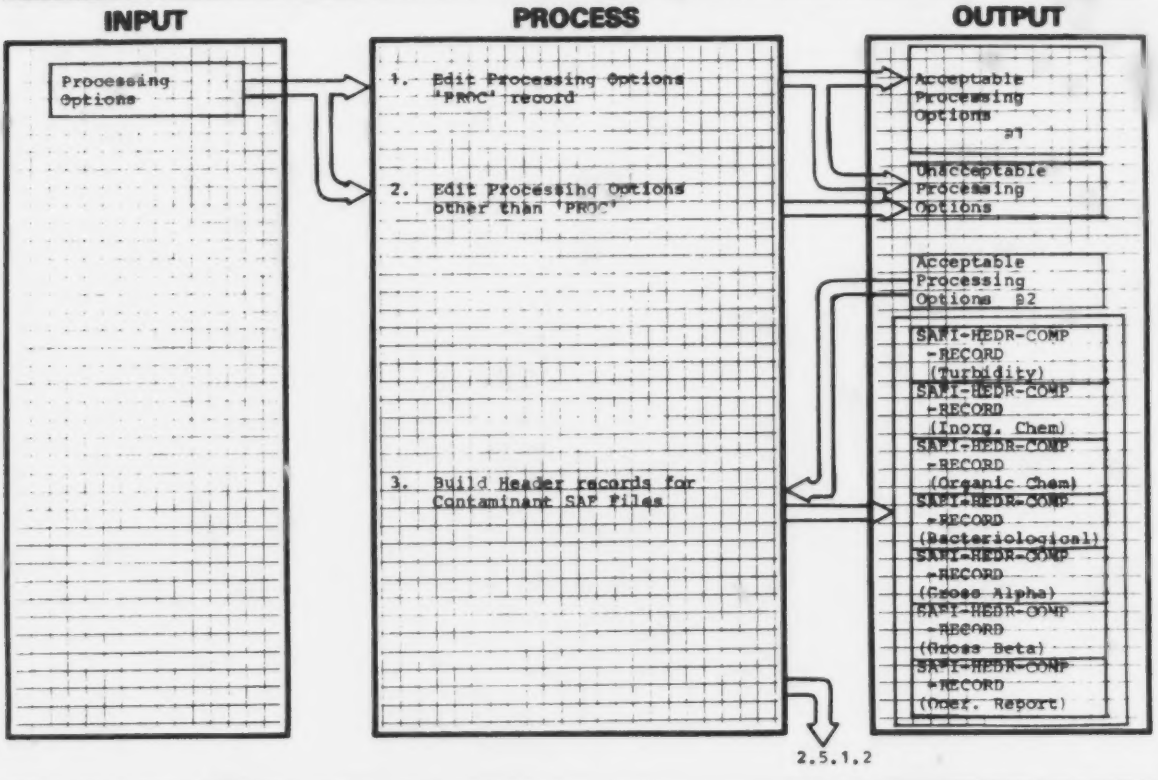


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options are edited for errors. A header record for each contaminant Sample Analysis File (SAF) and the Compliance Date File are built containing processing options information.	2.5.1.1	WAQC025	
2	If there were no errors in the Processing Options, the remainder of each contaminant SAF is built.	2.5.1.2	WAQC025	
3	The Standard Error Report is produced.	2.5.1.3	WAQC025	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-2-77 **Page:** 1 of 2

Diagram No.: 2.5.1.1 **Description:** Edit Processing Options



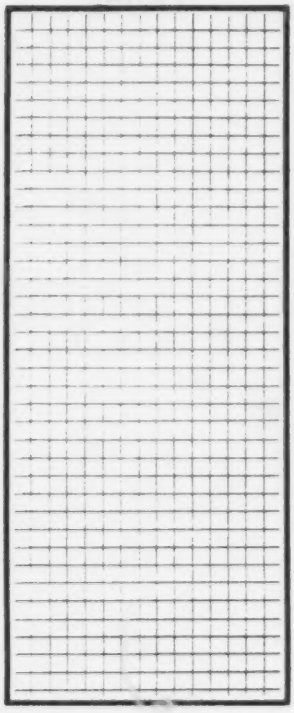
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Option Record with 'PROC' in positions 1-4 of the record as follows: a. Processing date (SAFI-PROC-DATE) must be a valid date. If it is invalid, write a message and terminate processing. If valid, convert to Julian mode for later use. b. Lag time (SAFI-PROC-LAG) must be numeric and be from 1 and 27 inclusive. If not, write a message and terminate processing after editing the remaining Processing Options. c. The compliance cycle number for Bacteriological and Turbidity processing (SAFI-PROC-COMPL-CYCLE) must be a number between 1 and 28 or blank. If blank, a default value of '01' is used. If invalid, write a message and terminate processing after editing the remaining Processing Options. d. The Average Daily Maximum Air Temperature for Inorganic Chemical processing (SAFI-AIR-TEMP) is edited for a number between 00.0 and 99.9. If invalid or blank, write a message and terminate processing after editing the remaining Processing Options. e. The Units of measurement (SAFI-PROC-UNITS) used in 1.d. above are edited for 'F' or 'C'. If blank or invalid, write a message and terminate processing after editing the remaining Processing Options.		WAQC025	121 218

MODEL STATE INFORMATION SYSTEM

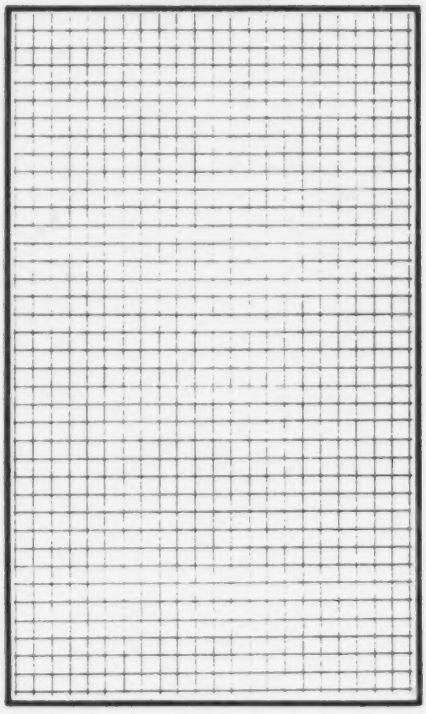
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-2-77 Page: 2 of 2

Diagram No.: 2.5.1.1 Description: Edit Processing Options

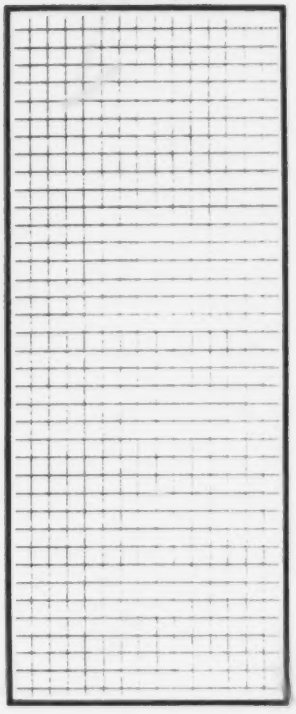
INPUT



PROCESS



OUTPUT

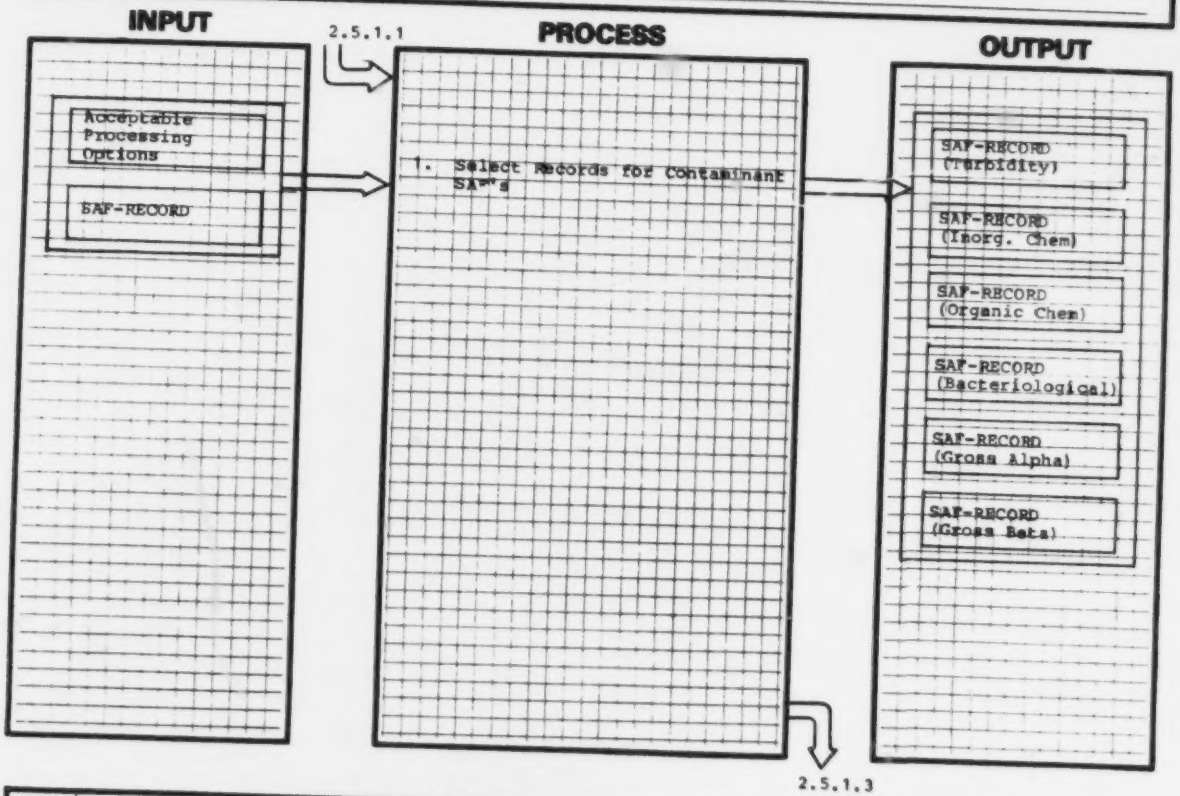


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	f. The season start date (SAFI-PROC-SEASON-START) for organic chemical processing must be a valid date. If invalid or blank write a message and terminate processing after editing the remaining Processing Options.			
	g. The season end date (SAFI-PROC-SEASON-END) for organic chemical processing must be a valid date and greater than SAFI-PROC-SEASON-START. If invalid or too early, write a message and terminate processing after editing the remaining Processing Options.			
	h. The Operation Report processing month (SAFI-PROC-OPERATION-REPORT) must be a valid month and year or blank. If blank, the field is filled with zeroes. If invalid, write a message and terminate processing.			
2	Edit all other Processing Options records. All of these records are in error and processing should be terminated.			
3	Build a header record (SAFI-HEDR-COMP-RECORD) for each of the contaminant Sample Analysis Files (SAF) and the Compliance Date File using 'LOW VALUES' for the SAFI-HC-PROC-ID. If processing is to be terminated due to invalid Processing Options, all but the 'LOW VALUES' field should be left blank and the SAFI-HC-DATE field should be filled with zeroes. If processing is to continue, values from the VIFI-PROC-COMP-RECORD should be copied to the SAFI-HEDR-COMP-RECORD. NOTE: If no 'PROC' record exists, processing will be terminated. If more than one 'PROC' record exists, processing will be terminated. Unacceptable Processing Options and associated messages will be written on the Standard Error Report.		WAQC025	218 221

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 2.5.1.2 **Description:** Build Contaminant SAF's

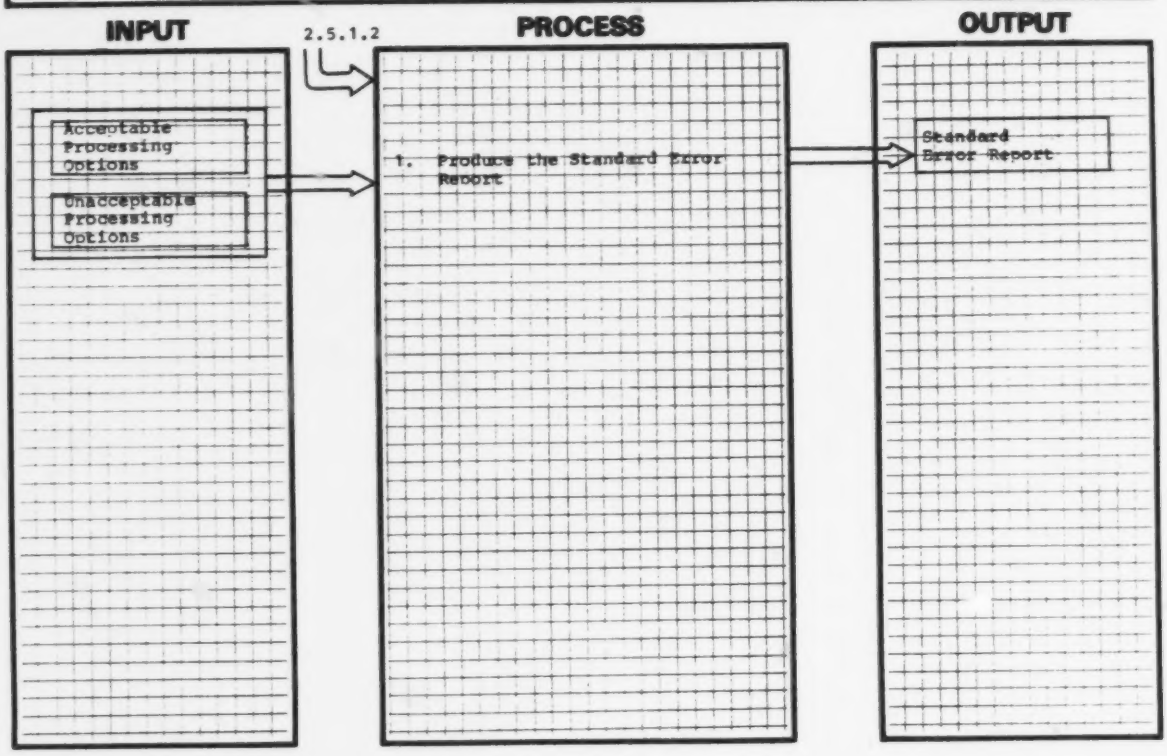


STEP	EXTENDED DESCRIPTION	REFERENCES		
		MPO	PROGRAM	OTHER
1	The processing date in the Acceptable Processing Options is examined to determine if the Contaminant Sample Analysis File (SAF) data records should be built: If processing date is blank, there was an error in the Processing Options and no SAF data records are built. If processing date is not blank, the Processing Options were valid and the six contaminant SAF data records files are built. The input SAF-RECORD's are copied to the output contaminant SAF's based on the Contaminant-ID: 0100 - 0999 to Turbidity SAF 1000 - 1999 to Inorganic Chemical SAF 2000 - 2999 to Organic Chemical SAF 3000 - 3999 to Bacteriological SAF 4000 - 4099 to Gross Alpha SAF 4100 - 4999 to Gross Beta SAF		WAOC025	21[illegible] 254

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-2-77 **Page:** 1 of 1

Diagram No.: 2.5.1.3 **Description:** Produce Standard Error Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Error Report is produced indicating whether or not the Processing Options were in error; and if so, what the errors were. If any Processing Options records are in error, the record and associated error messages are produced. If the Processing Options records were not in error, a message to this effect is produced instead of the error messages.		WAQC025	MSIS. 309

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC031
DATE: March 3, 1977

I. OBJECTIVES:

The objective of this program is to edit the Turbidity records from the Contaminant Sample Analysis File (SAF) and the Periodic Sample File (PSF) for Maximum Contaminant Level (MCL) and Sampling violations. MCL violations data are used to build the Turbidity MCL Violations File (VIF) which is passed to program WAQC051. Sampling violations data are used to build the Turbidity Sampling VIF which is passed to program WAQC080. Both MCL and Sampling violations data are used to build the Turbidity VIF Update Transactions File which is passed to program WAQC120. WAQC031 also builds the Turbidity Remaining PSF and the Turbidity Updated SAF from the processed sample records.

II. INPUTS:

A. Record Forms And Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Turbidity Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
2.	Periodic Sample File	PSF-HEADER-RECORD	WAQC.251
		PSF-RECORD	WAQC.252
3.	Public Water File	PWF-RECORD	PWSI.200
4.	Regulations File	RGF-TURB-RECORD	REGS.251
5.	Compliance Status	CSF-RECORD	WAQC.257

B. Processing Options Record:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Turbidity Remaining Periodic Sample File	PSF-HEADER-RECORD PSF-RECORD	WAQC.251 WAQC.252
2.	Turbidity Updated Sample Analysis File	SAFI-HEDR-COMP-RECORD SAF-RECORD	WAQC.221 WAQC.254
3.	Turbidity MCL Violations File	VIFI-HEDR-REPT-RECORD VIFI-M-REPT-RECORD	WAQC.213 WAQC.216
4.	Turbidity Sampling Violations File	VIFI-HEDR-REPT-RECORD VIFI-S-REPT-RECORD	WAQC.213 WAQC.231
5.	Turbidity Violations File (VIF) Update Transactions File	VIFI-TR00-UPDT-RECORD VIFI-TR01-UPDT-RECORD VIFI-TR02-UPDT-RECORD	WAQC.223 WAQC.224 WAQC.225

B. Report Layout:

	NAME	EXHIBIT LAYOUT
1.	Turbidity Warnings Report	WAQC.326

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify the header record on the Turbidity Sample Analysis File (SAF) to determine if processing is to continue. Extract data to be used to build header records for the Turbidity Updated SAF , the Turbidity Maximum Contaminant Level (MCL) Violations File (VIF) , and the Turbidity Sampling VIF.

2. Build the Turbidity Internal Regulations Tables from the Federal and State information on the Regulations File (RGF).

3. Edit Turbidity sample records from the Periodic Sample File (PSF) and the Turbidity Sample Analysis File (SAF) against information in the Public Water File (PWF) and the Internal Regulations Tables to determine Maximum Contaminant Level (MCL) and Sampling violations. Write MCL violation records to the Turbidity MCL Violations File to be passed to program WAQC051 for producing the Turbidity MCL Violations Report. Write sampling violation records to the Turbidity Sampling Violations File to be passed to program WAQC080 for producing the Turbidity Sampling Violations Report.

   Write update transactions records to the Turbidity Violations File (VIF) Update Transactions File to be passed to program WAQC120 to be used to update the VIF. Write those sample records not edited for violations to the Turbidity Remaining PSF and write summaries of those records edited for violations to the Turbidity Updated SAF.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

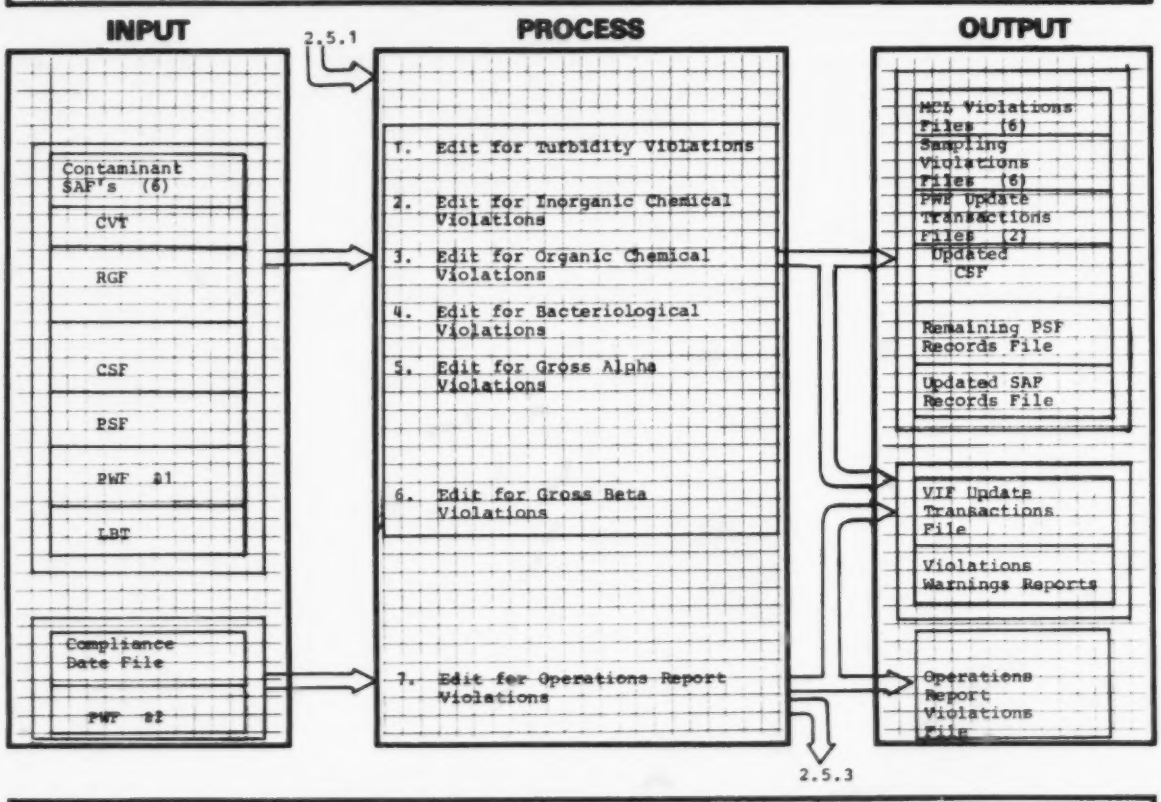
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 **of** 2

Diagram No.: 2.5.2 **Description:** Edit for Compliance



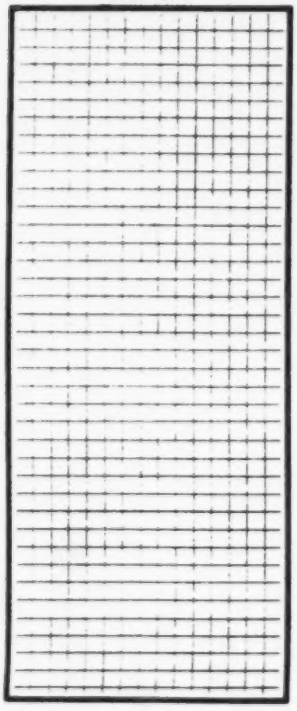
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the records from the Turbidity Sample Analysis File (SAF) against internal data arrays built from the Compliance Status File (CSF), the Periodic Sample File (PSF), the Regulations File (RGF), and the Public Water File (PWF) for compliance with both the State and Federal regulations. The Internal Code Value Table (CVT) is built from the CVT, to be used in the Violations Files. The Maximum Contaminant Level (MCL) violations are posted to the Turbidity MCL Violations File; the sampling violations are posted to the Turbidity Sampling Violations File. Both MCL and Sampling Violations are also posted to the Turbidity Violations File (VIF) Update Transactions File. Transactions to update the PWF are posted to the PWF Update Transactions File. Those sample records to be retained in the PSF are posted to the Turbidity Remaining PSF Records File. Those sample records to be retained in or added to the SAF are posted to the Turbidity Updated SAF Records File. The CSF records are posted, with changes if updated, to the Updated CSF. Those situations for which the State or PWS should receive notifications instead of violations cause messages to be produced on the Warnings Report.	2.5.2.1	WAQC031	

MODEL STATE INFORMATION SYSTEM

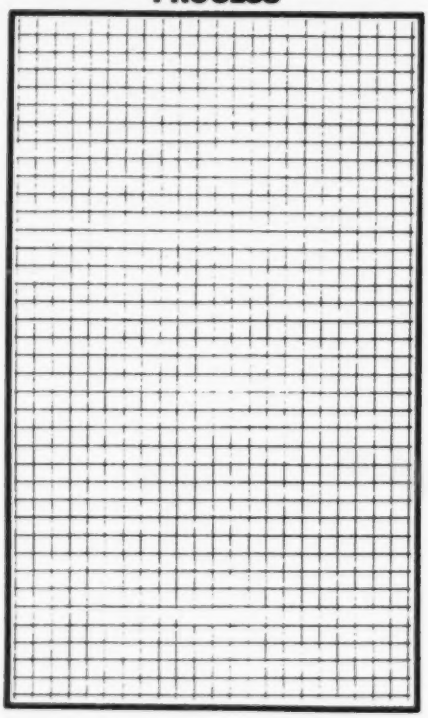
Diagram Type: Overview Subsystem: Water Quality Compliance Date: 2-11-77 Page: 2 of 2

Diagram No.: 2.5.2 Description: Edit for Compliance

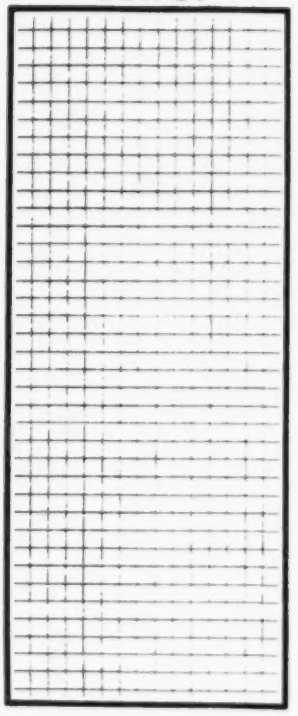
INPUT



PROCESS



OUTPUT

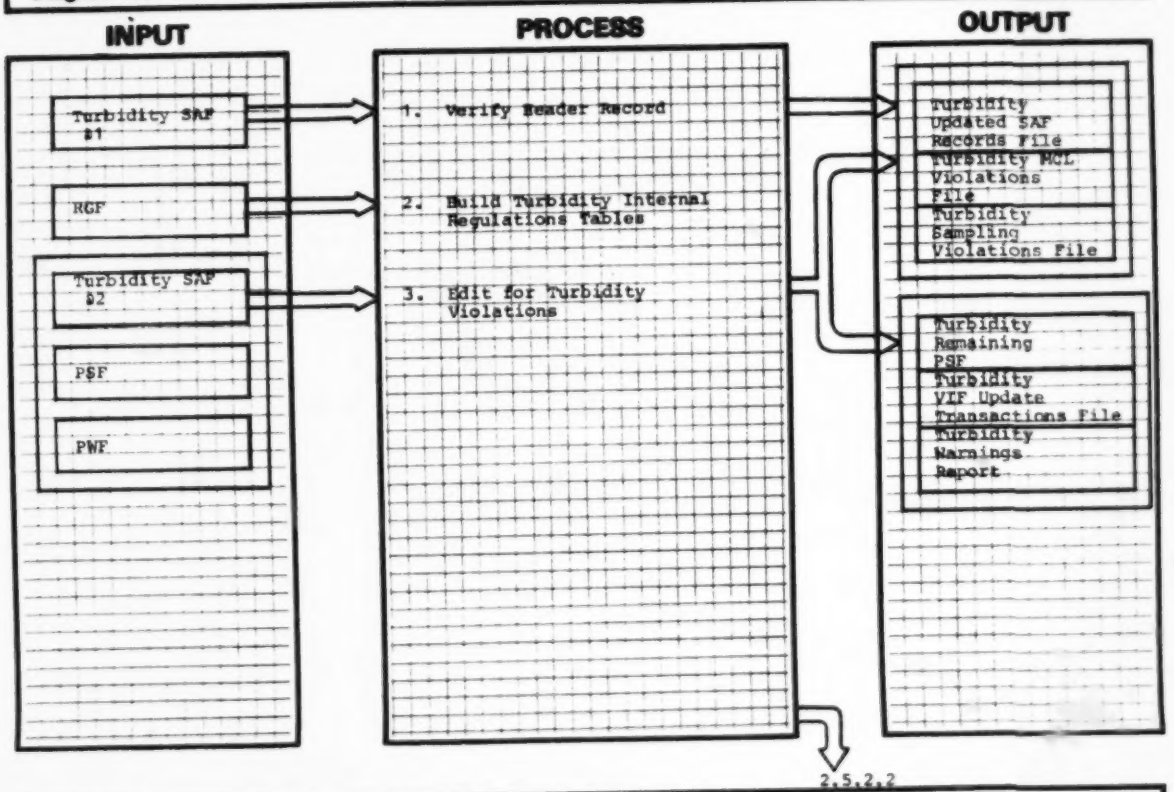


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	Records from the Inorganic Chemical Sample Analysis File (SAF) are edited in a manner similar to Step 1. Violations are handled and records posted in the same manner except that Inorganic Chemical records are not summarized.	2.5.2.2	WAQC032	
3	Records from the Organic Chemical SAF are edited in a manner similar to Step 2. Violations are handled and records are posted in the same manner as Step 2.	2.5.2.3	WAQC033	
4	Records from the Bacteriological SAF are edited in a manner similar to Step 1. Violations are handled and records are posted in the same manner as Step 1.	2.5.2.4	WAQC034	
5	Records from the Gross Alpha SAF are edited in a manner similar to Step 2. Violations are handled and records are posted in the same manner as Step 2.	2.5.2.5	WAQC035	
6	Records from the Gross Beta SAF are edited in a manner similar to Step 2. Violations are handled and records are posted in the same manner as Step 2.	2.5.2.6	WAQC036	
7	Records from the Public Water File (PWF) are edited for monthly submission of the Operations Report. Operations Report Violations are posted to the Operations Report Violations File and to the Operations Report Violations File (VIF) Update Transactions File.	2.5.2.7	WAQC037	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 4-13-7 Page: 1 of 1

Diagram No.: 2.5.2.1 Description: Edit for Turbidity Violations

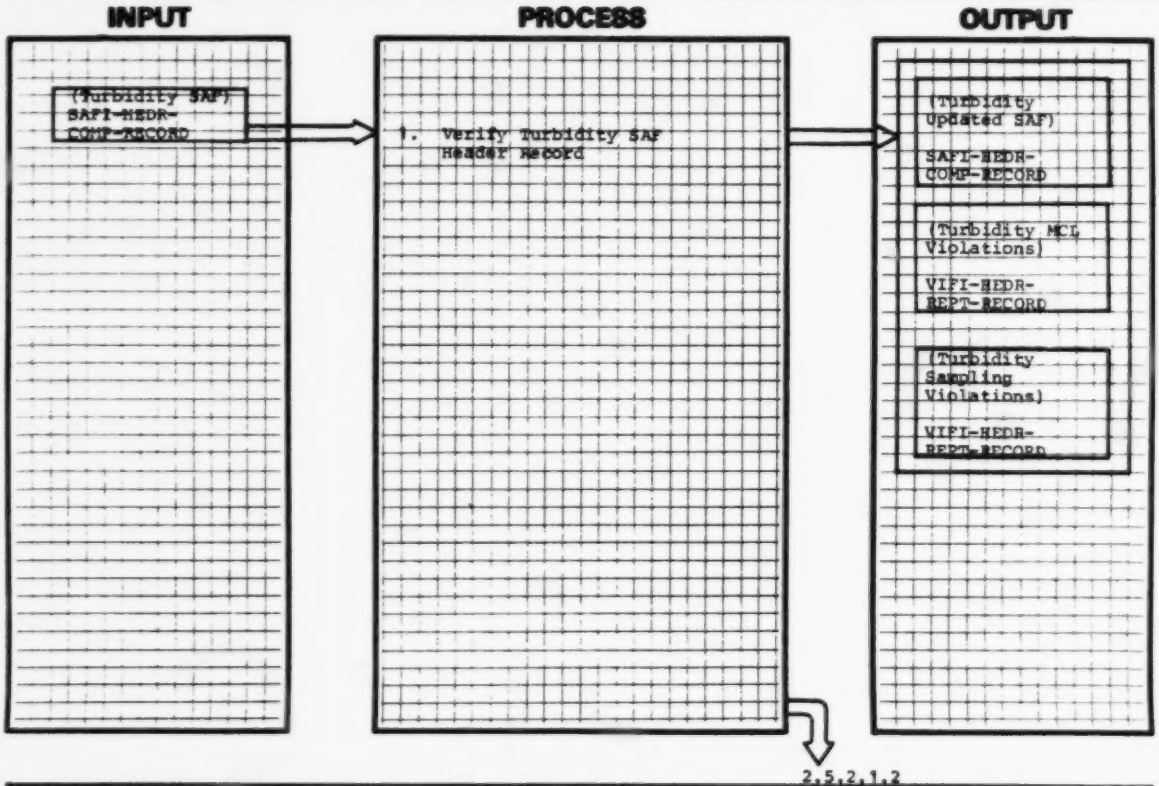


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Header Record on the Turbidity Sample Analysis File (SAF) by checking the date to determine if processing is to continue, and what information is to be copied to the Header Record of the Turbidity Updated SAF, MCL Violations and Sampling Violations files.	2.5.2.1.1	WAQC031	
2.	Build the Turbidity Internal Regulations Tables with information from the Regulations File (RGF) Records.	2.5.2.1.2	WAQC031	
3.	Edit Turbidity samples from the Turbidity SAF and the Periodic Sample File (PSF) against information from the Public Water File (PWF) and the Internal Regulations Tables built in Step 2. Edits may result in building Violation Records, Violations File (VIF) update transactions, Warnings Report Messages, and updated PSF and SAF sample records.	2.5.2.1.3	WAQC031	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 4-13-77 Page: 1 of 1

Diagram No.: 2.5.2.1.1 Description: Verify SAF Header Record

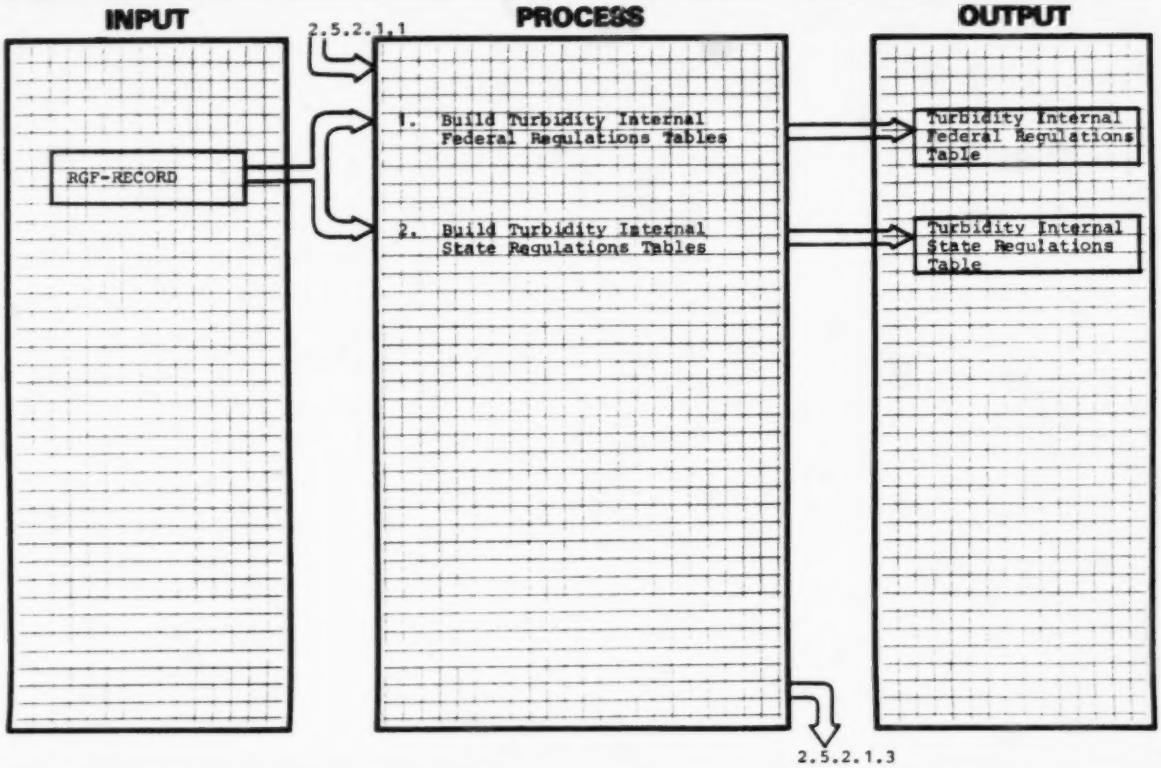


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Turbidity Sample Analysis File (SAF) header record (SAFI-HEDR-COMP-RECORD), for 'zeros' in the processing date (SAFI-HC-DATE) and build header records for the Turbidity Updated SAF Records File (SAFI-HEDR-COMP-RECORD), for the Turbidity MCL Violations File (VIFI-HEDR-REPT-RECORD), and for the Turbidity Sampling Violations File (VIFI-HEDR-REPT-RECORD). If a processing date of 'zeros' was found in the SAF Header Record, build file header records containing only 'zeros' in the processing date. This will cause termination of processing in those programs to which the file is passed. If the processing date is not 'zeros', the output file Header Records are built containing all the information in SAFI-HEDR-COMP-RECORD. This will initiate normal processing in those programs to which the files are passed. NOTE: Updated SAF passed to WAQC038 (HIPO 2.5.3.1) MCL Violations File passed to WAQC051 (HIPO 2.5.4.1.3) Sampling Violations passed to File WAQC080 (HIPO 2.5.4.2.3)		WAQC031	213 221

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-3-77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.1.2 **Description:** Build Turbidity Internal Regulations Tables

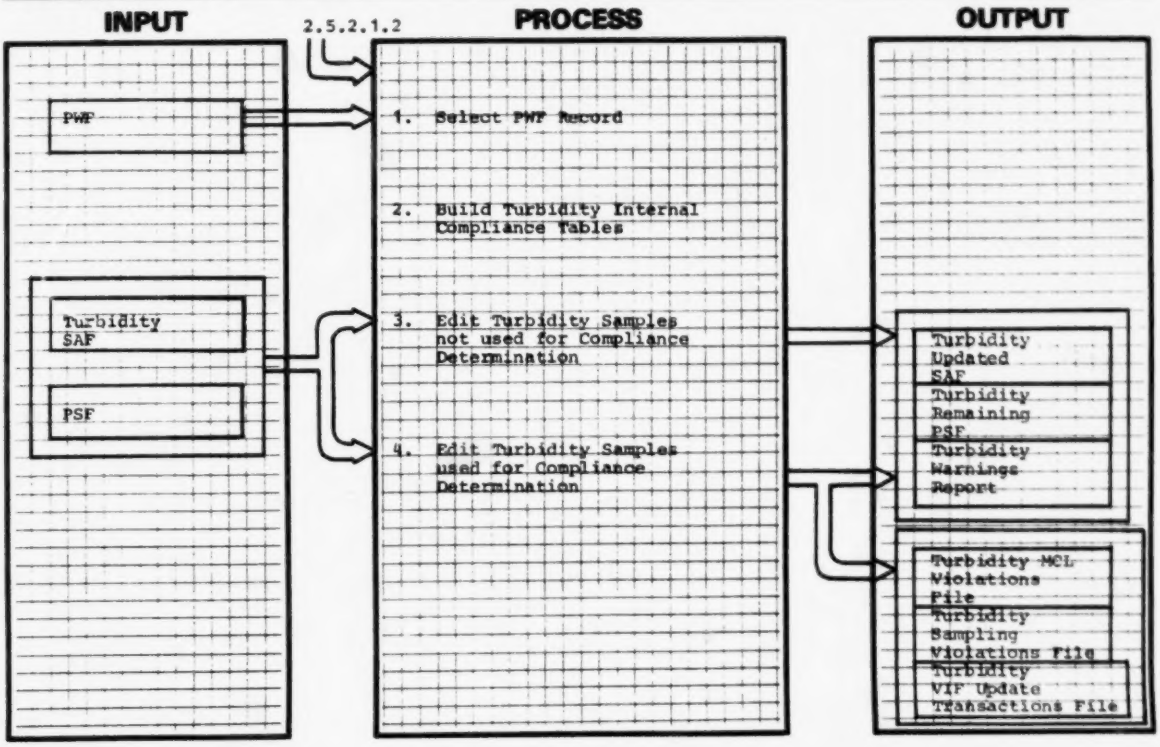


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Turbidity Internal Federal Regulations Table by selecting the following information from the Federal records on the Regulations File (RGF) with a Contaminant Group code (first position of Contaminant ID) of '0' and by storing internally: -Effective date of regulations -All sources flag -Monthly average MCL -Consecutive daily average MCL -Repeat sample included flag -Number of consecutive daily samples to be averaged -Monitoring frequency for community/non-community PWS -Maximum resampling period		WAQC031	REGS. 251
2	Build the Turbidity Internal State Regulations Table by selecting the information shown in Step 1 from the State records on the RGF with contaminant group code = '0' NOTE: Federal or state records on the RGF are identified by 'FP' or 'SP' respectively in the 'REGU-LEVEL' field.		WAQC031	REGS. 251

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 of 2

Diagram No.: 2.5.2.1.3 **Description:** Edit for Turbidity Violations

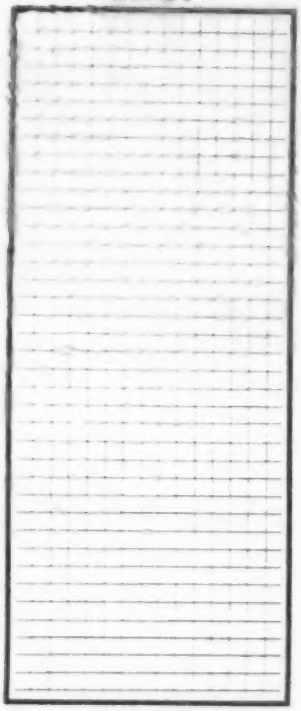


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select Public Water File (PWF) records, one PWS at a time, and store internally.	2.5.2.1.3.1	WAQC031	
2	Build Turbidity Internal Compliance Tables from the Internal Regulations Tables and data from the internally stored PWF record (Step 1) if the compliance cycle number of the PWS matches that on the Processing Options as determined in Step 1.	2.5.2.1.3.2	WAQC031	

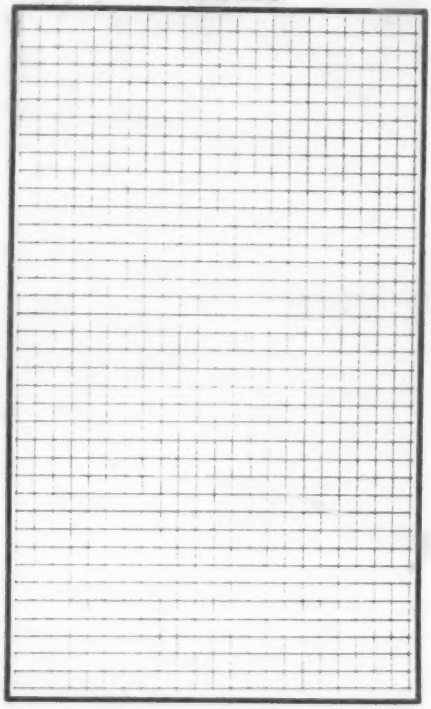
MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 2 **of** 2
Diagram No.: 2.5.2.1.3 **Description:** Edit for Turbidity Violations

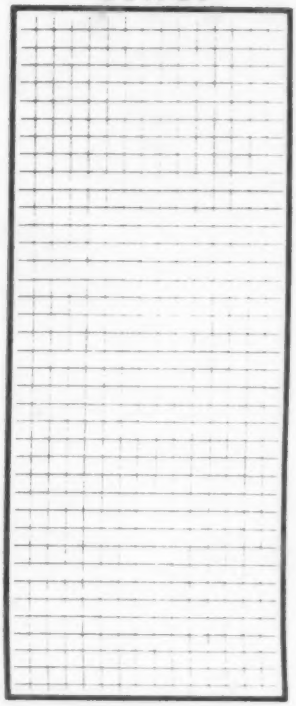
INPUT



PROCESS



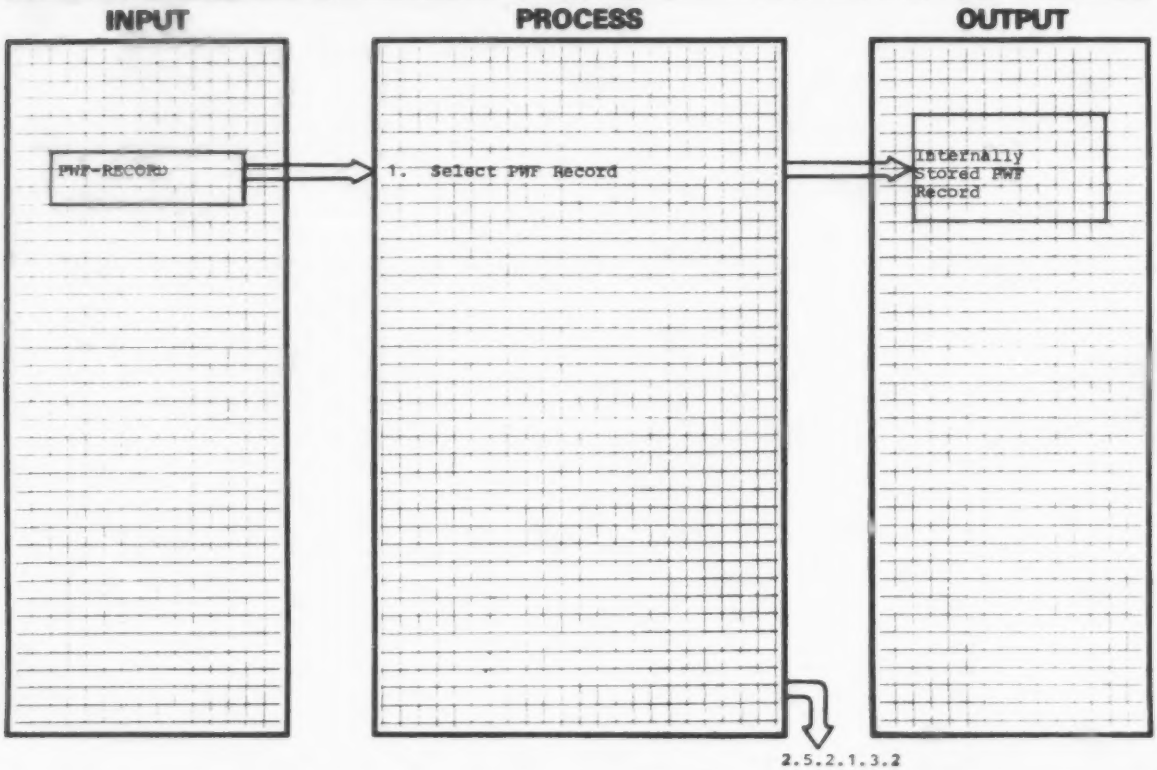
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	Edit Turbidity samples for those Public Water Systems (PWS's) whose compliance cycle number does not match that on the Processing Options as determined in Step 1. Determine if processing was skipped for the most recent compliance period for this PWS and, if so, issue an appropriate warning message.	2.5.2.1.3.3	WAQC031	
4.	Edit Turbidity samples for those PWS whose compliance cycle matches that on the Processing Options as determined in Step 1, for Maximum Contaminant Level (MCL) and sampling violations, using data from the Internal Turbidity Compliance Tables.	2.5.2.1.3.4	WAQC031	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 **of** 1
Diagram No.: 2.5.2.1.3.1 **Description:** Select PWF Record

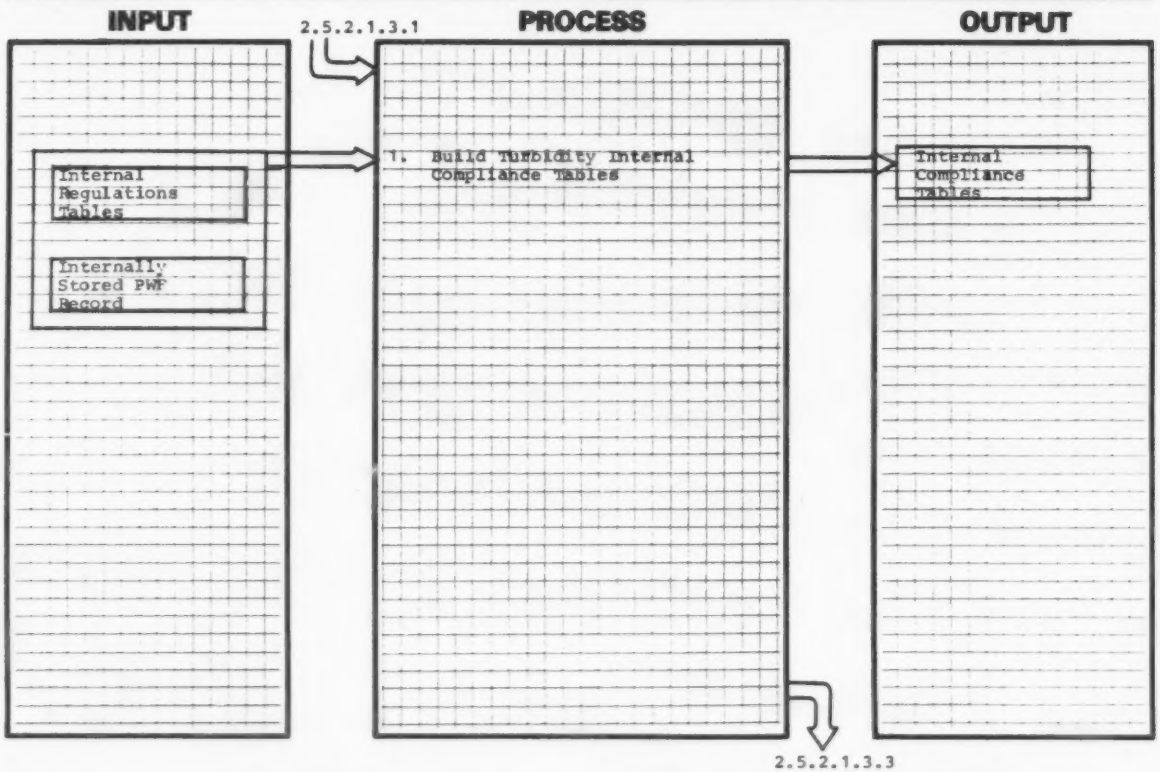


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	a. Select each Public Water File (PWF) record in turn and store internally b. Compute the date of the most recent compliance period for this PWS (See Appendix A.1). Determine the compliance status of the Public Water System (PWS) by comparing the the compliance cycle number (PWF-PLANT-COMPLIANCE-CYCLE) to the compliance cycle number in the Processing Options. If the compliance cycle numbers are identical, samples for this PWS will be fully processed for compliance (HIPO 2.5.2.1.3.4). If not, samples will be examined for detection of missed compliance periods. (HIPO 2.5.2.1.3.3) Determine if the PWS is excluded from sampling for Turbidity (See Appendix B.1).		WAQC031	PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 **of** 1

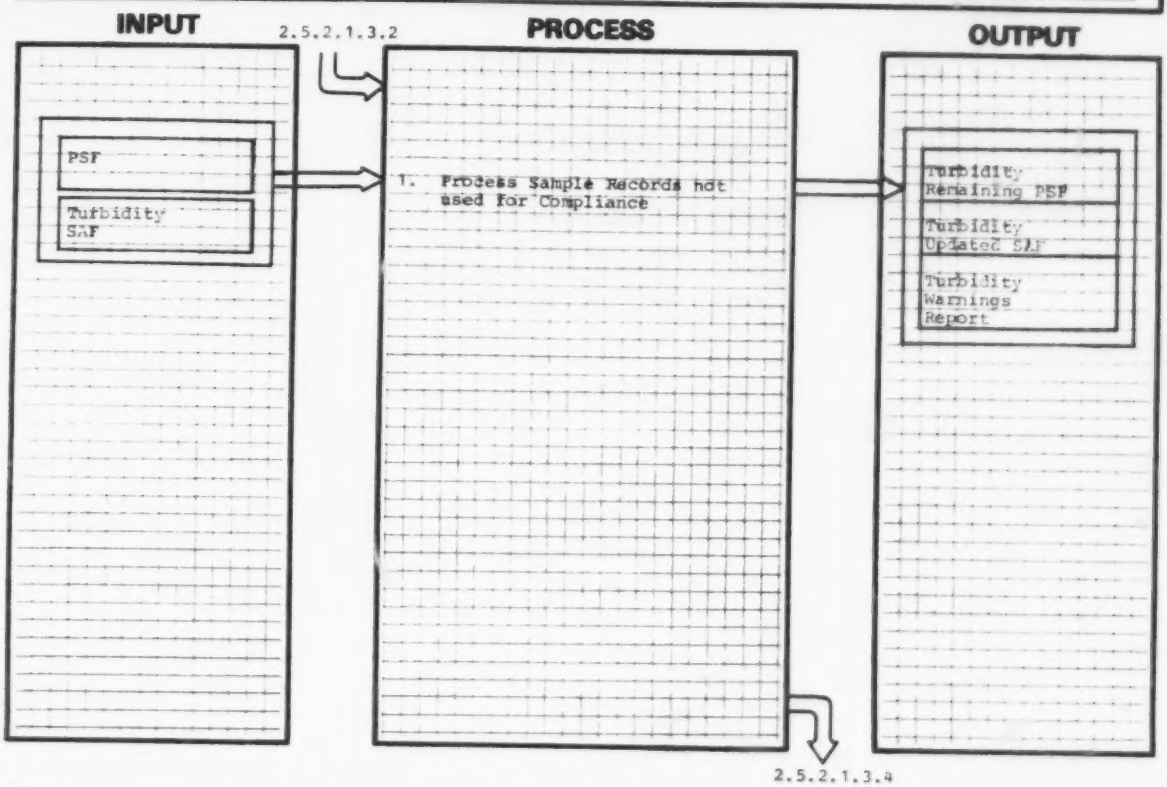
Diagram No.: 2.5.2.1.3.2 **Description:** Build Turbidity Internal Compliance Tables



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Compliance Tables for Turbidity by copying the Internal Regulations Tables to the Internal Compliance Tables and then modifying them with Public Water System (PWS) specific Turbidity compliance data from the Public Water File (PWF). This step is performed only for those PWS's with compliance cycle numbers matching the Processing Options request. Refer to Appendix C.1.		WAQC031	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 of 1
Diagram No.: 2.5.2.1.3.3 **Description:** Process Sample Records not used for compliance

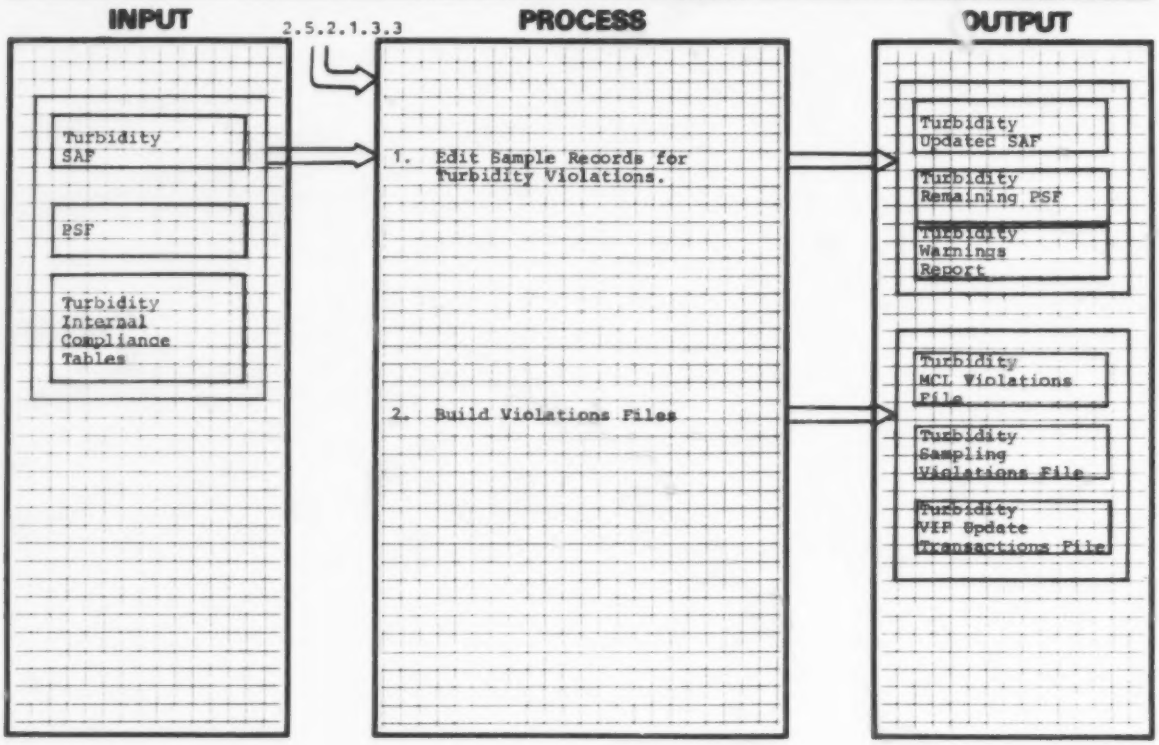


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Examine Turbidity sample records for those Public Water Systems whose compliance cycle does not match the compliance cycle number requested on the Processing Options. If samples are found on the Periodic Sample File (PSF) for a compliance period older than the one requested on the Processing Options and if no summary record exists on the Sample Analysis File (SAF) for the same Compliance period, produce a warning message. This indicates that processing for a compliance cycle has been skipped. Refer to Appendix D.1 for details.		WAQC031	252 254

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 of 1

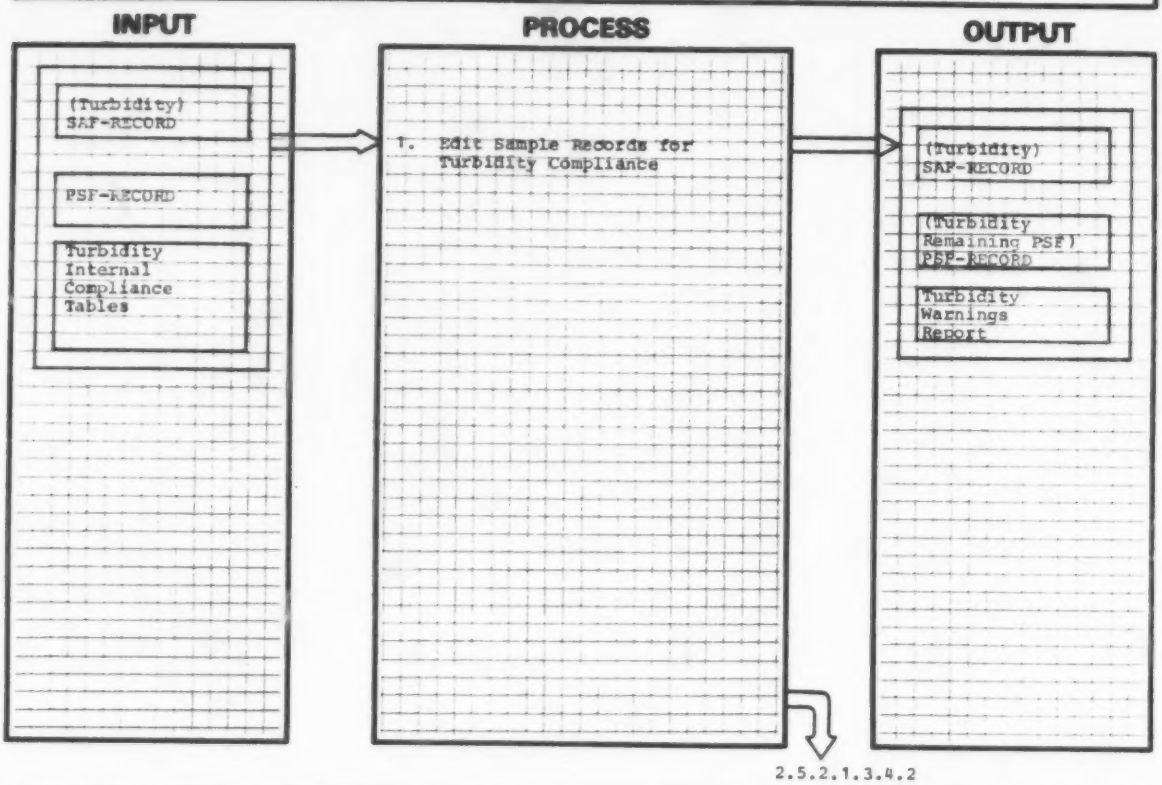
Diagram No.: 2.5.2.1.3.4 **Description:** Process Sample Records used for Compliance



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Turbidity sample records for those Public Water Systems whose compliance cycle number matches the compliance cycle number requested on the Processing Options, against the Turbidity Internal Compliance Tables, for Maximum Contaminant Level (MCL) and Sampling violations of both Federal and State regulations. Build summary records from input detail records to be written to the Turbidity Updated Sample Analysis File (SAF).	2.5.2.1. 3.4.1	WAQC031	
2	Generate MCL and Sampling Violations File records for samples in violations and generate transaction to update the Violations File (VIF), using additional information from the internally stored Public Water File (PWF) record.	2.5.2.1. 3.4.2	WAQC031	

MODEL STATE INFORMATION SYSTEM

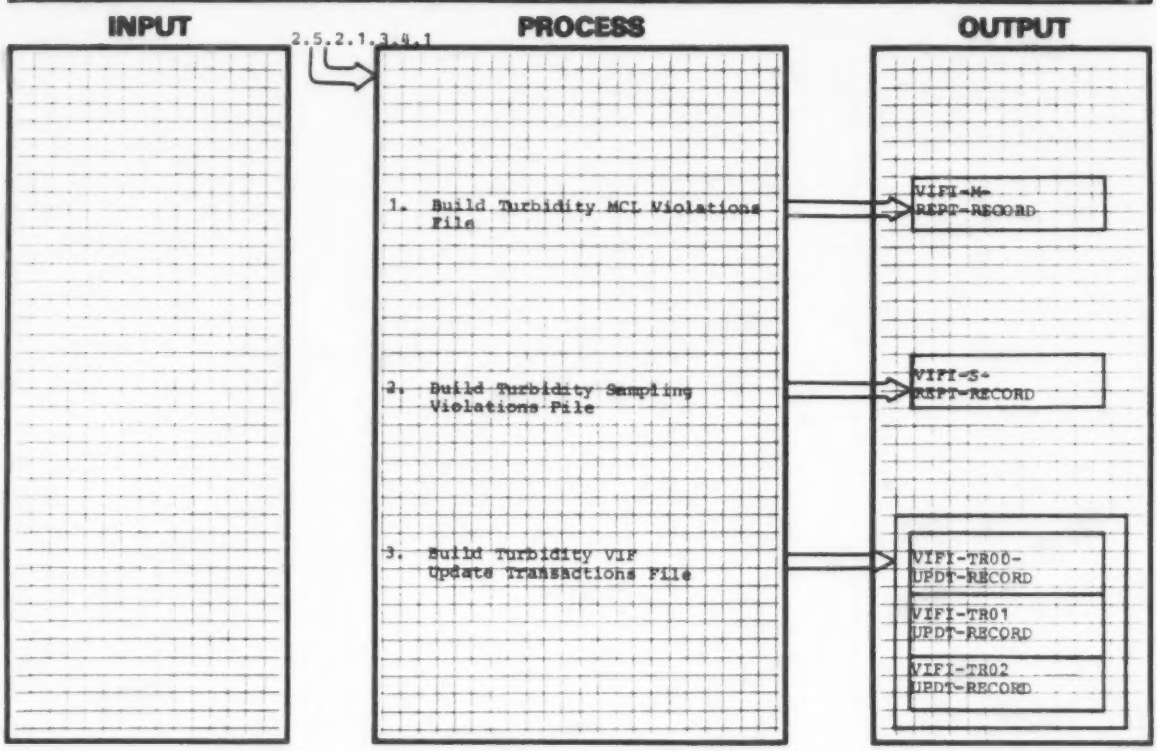
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 **of** 1
Diagram No.: 2.5.2.1.3.4.1 **Description:** Edit Sample Records for Turbidity Compliance



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit Turbidity regular and repeat detail sample records from the Periodic Sample File (PSF) for Public Water Systems (PWS's) which are not excluded (HIPO 2.5.2.1.3.1) and whose compliance cycle number matches that on the Processing Options for consecutive daily and monthly average Maximum Contaminant level (MCL) violations and for regular and repeat sampling violations (see Appendix E.1 for details). Edit results are tabulated in internal data arrays which will be used to generate appropriate violations records (HIPO 2.5.2.1.3.4.2). When all detail samples for the compliance period have been examined, use the information in the internal data arrays to generate summary records to be written to the Turbidity Updated Sample Analysis File (SAF). If examination of the SAF indicates that compliance has already been processed for this compliance cycle (an SAF summary record is found within the period) produce a warning message and set a flag to prevent generation of violations and to prevent reissuing the warning message. If summary records were input from the PSF, extract violation information directly from the input summary records and perform only the summarization process on any detail records (see Appendix E.1 for details). Sample records other than regular or repeat samples are summarized but not examined for violations.		WAQC031	252 254

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 8-11-77 **Page:** 1 **of** 2
Diagram No.: 2.5.2.1.3.4.2 **Description:** Build Violations Files



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build Turbidity Maximum Contaminant Level (MCL) Violations File records, (VIFI-M-REPT-RECORD) from the internal data arrays generated in HIPO 2.5.2.1.3.4.1 for daily consecutive MCL violations and monthly average MCL violations of both Federal and State regulations. These records are passed to program WAQC051 (HIPO 2.5.4.1.3) to be used to produce the Turbidity MCL Violations Report. Refer to Appendix F.1 for the derivations of specific fields.		WAQC031	216
2	Build Turbidity Sampling Violations File records (VIFI-S-REPT-RECORD) from the internal data arrays generated in HIPO 2.5.2.1.3.4.1 for regular and repeat sampling violations of both Federal and State regulations. These records are passed to program WAQC080 (HIPO 2.5.4.2.3) to be used to produce the Turbidity Sampling Violations Report. Refer to Appendix F.1 for the derivation of specific fields.		WAQC031	231
3	Build Turbidity Violations File (VIF) update transactions (VIFI-TR00-UPDT-RECORD, VIFI-TR01-UPDT-RECORD, VIFI-TR02-UPDT-RECORD) for each violation determined in HIPO 2.5.2.1.3.4. All these transactions are built for each violation of Federal or State regulations. Refer to Appendix F.1 for derivation of specific fields.		WAQC031	223 224 225

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC032
DATE: March 7, 1977

I. OBJECTIVES:

This program edits the Inorganic Chemicals Records from the Contaminant Sample Analysis File (SAF) and the Periodic Sample File (PSF) for Maximum Contaminant Level (MCL) and sampling violations. The MCL violations are used to build the Inorganic Chemical MCL Violations File which is passed to WAQC040. The sampling violations are used to produce the Inorganic Chemical Sampling Violations File which is passed to WAQC060. Both MCL and sampling violations are used to produce the Inorganic Chemicals Violations File (VIF) Update Transactions File which is passed to WAQC120.

This program also builds the Inorganic Chemicals Remaining Periodic Sample File (PSF) and the Inorganic Chemicals Updated Sample Analysis File (SAF).

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Inorganic Chemicals Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
2.	Periodic Sample File	PSF-HEADER-RECORD	WAQC.251
		PSF-RECORD	WAQC.252
3.	Public Water File	PWF-RECORD	PWSI.200
4.	Compliance Status File	CSF-RECORD	WAQC.257
5.	Regulations File	RGF-CHEM-RECORD	REGS.250
6.	Code Value Table	CVT-RECORD	MSIS.206
7.	Laboratory Table	LBT-RECORD	WAQC.250
		LBT-HDR-RECORD	WAQC.256

B. Processing Options Record:

Not Applicable

III. OUTPUTS:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Compliance Status File	CSF-RECORD	WAQC.257
2.	Inorganic Chemical Remaining Periodic Sample File	PSF-RECORD	WAQC.252
3.	Inorganic Chemical Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
4.	Inorganic Chemical MCL Violations File	VIFI-HEDR-REPT-RECORD	WAQC.213
		VIFI-M-REPT-RECORD	WAQC.216
5.	Inorganic Chemical Sampling Violations File	VIFI-HEDR-REPT-RECORD	WAQC.213
		VIFI-S-REPT-RECORD	WAQC.231
6.	Inorganic Chemical VIF Update Transactions File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225
7.	Inorganic Chemicals PWF Update Transactions File	PWFI-TRAN-10	PWSI.223

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Inorganic Chemical Warnings Report	WAQC.326

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify the Inorganic Chemical Sample Analysis File (SAF) header record by checking the date to

determine if processing is to continue and what information is to be copied to the header records of the Inorganic Chemical Updated SAF Record, MCL Violations, and Sampling Violations Files.

2. Build the Internal Code Value Table (CVT) from the CVT.

3. Build the Inorganic Chemical Internal Regulations Tables from information extracted from the Regulations File (RGF).

4. Edit the Inorganic Chemical Samples from the Periodic Sample File (PSF) and the Inorganic Chemical SAF against information from the Compliance Status File (CSF), the Public Water File (PWF), and the Internal Regulations Tables built in Step 3. The edits can result in building Inorganic Chemical MCL Violation Records, Inorganic Chemical Sampling Violation Records, Inorganic Chemical Violations File (VIF) Update Transactions, Inorganic Chemical Public Water File (PWF) Update Transactions, Inorganic Chemical Violations Warnings Report messages, an Updated CSF, Inorganic Chemical Remaining PSF Records, and Inorganic Chemicals Updated SAF Records. The Laboratory Table (LBT) is used to provide the Lab Name for the MCL Violations File.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

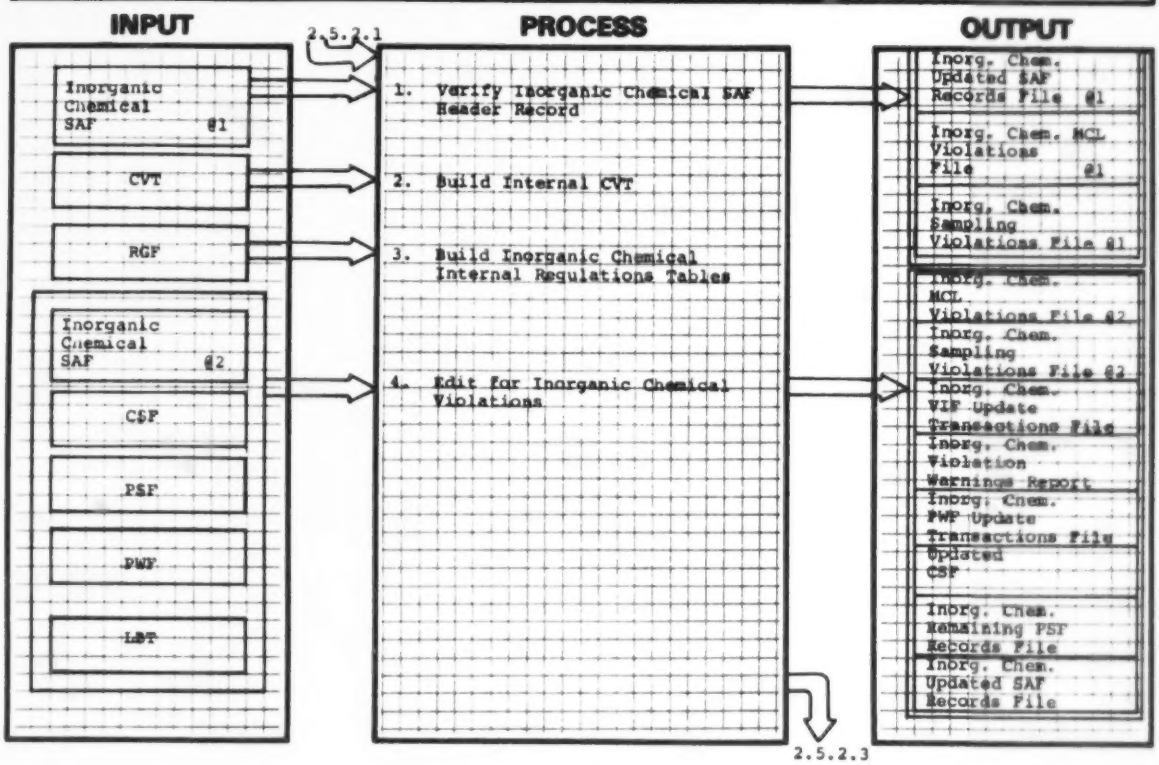
Not Applicable

B. Data Element Descriptions:

1. Compliance Status File

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1
Diagram No.: 2.5.2.2 **Description:** Edit for Inorganic Chemical Violations

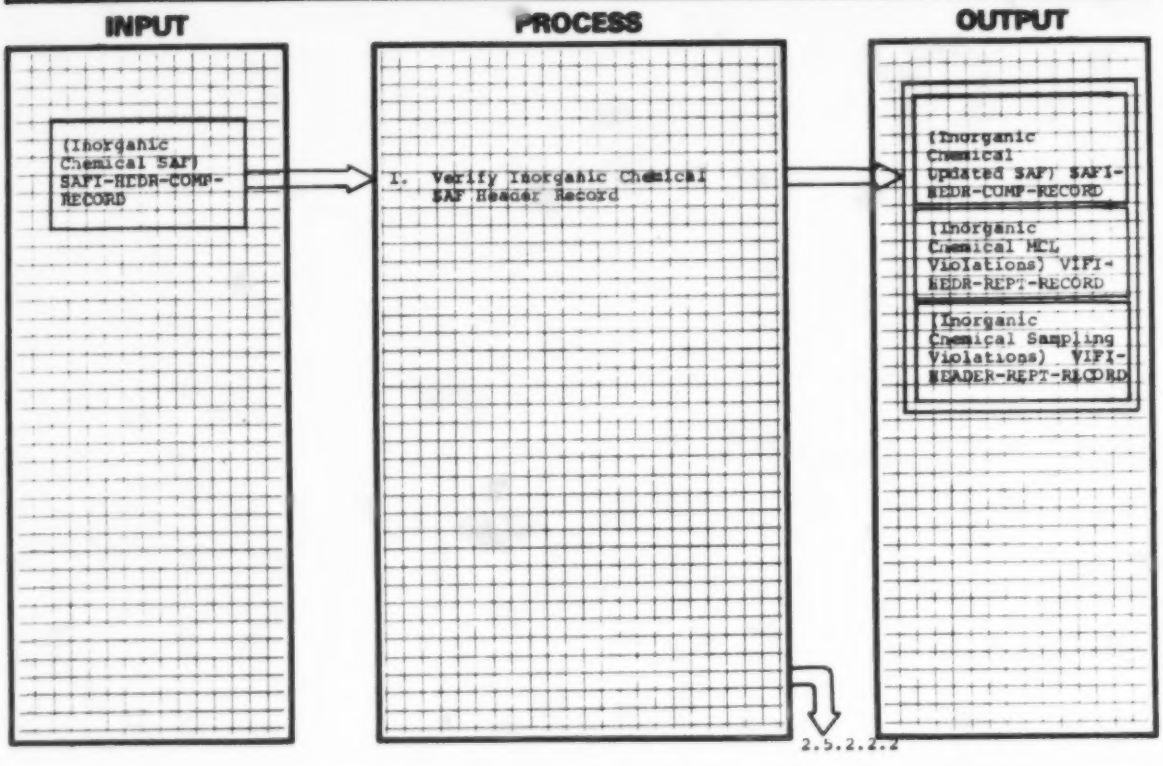


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record on the Inorganic Chemical Sample Analysis File (SAF) by checking the date to determine if processing is to continue and what information is to be copied to the header records of the Inorganic Chemical Updated SAF Records, MCL Violations, and Sampling Violations Files.	2.5.2.2.1	WAQC032	
2	Build the Code Value Table (CVT) from the CVT.	2.5.2.2.2	WAQC032	
3	Build the Inorganic Chemical Internal Regulations Tables from information extracted from the Regulations File (RGF) records.	2.5.2.2.3	WAQC032	
4	Edit the Inorganic Chemical samples from the Inorganic Chemical SAF and the Periodic Sample File (PSF) against information from the Compliance Status File (CSF), the Public Water File (PWF), and the Internal Regulations Table built in Step 3. The edits can result in creating Violation records, Violations File (VIF) and PWF Update Transactions records, Warnings Report messages, an updated CSF, and Remaining PSF and Updated SAF sample records. The Laboratory Table (LBT) is used to provide the LAB-NAME for the MCL Violations File.	2.5.2.2.4	WAQC032	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.2.1 **Description:** Verify Inorganic Chemical SAF Header Record

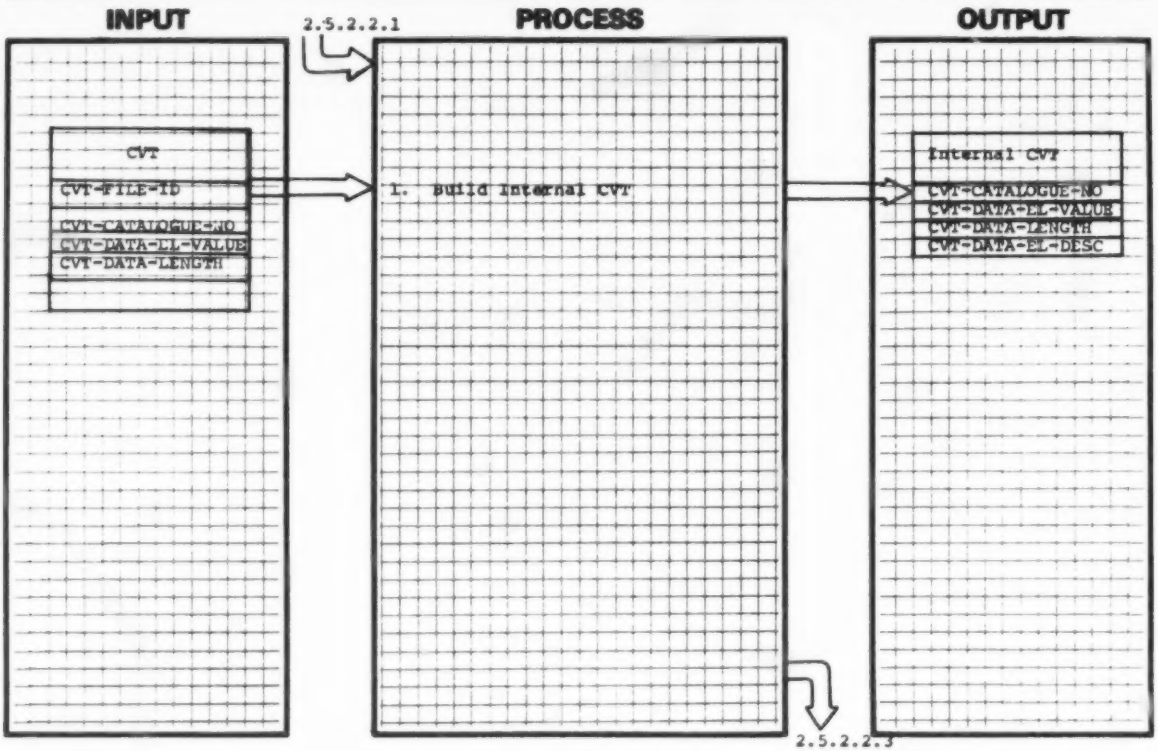


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Inorganic Chemical Sample Analysis File (SAF) Header Record, SAFI-HEDR-COMP-RECORD, for 'zeros' in the processing date, SAFI-HC-DATE and build the header records for the Inorganic Chemical Updated SAF Records File, SAFI-HEDR-COMP-RECORD, for the Inorganic Chemical MCL Violations File, VIFI-HEDR-REPT-RECORD, and for the Inorganic Chemical Sampling Violations File, VIFI-HEDR-REPT-RECORD. If the processing date is 'zeros', the output file header records are built containing only the SAFI-HC-DATE value. This will terminate processing in those programs to which the header records are passed. If the processing date is not 'zeros', all the output file header records are built containing all the information in SAFI-HEDR-COMP-RECORD. This will permit normal processing in those programs to which the header records are passed. Note: The Inorganic Chemical Updated SAF Records File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC038 (HIPO 2.5.3.1). The Inorganic Chemical MCL Violations File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC040 (HIPO 2.5.4.1.2). The Inorganic Chemical Sampling Violations File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC060 (HIPO 2.5.4.2.2).		WAQC032	221 213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.2.2 **Description:** Build Internal CVT

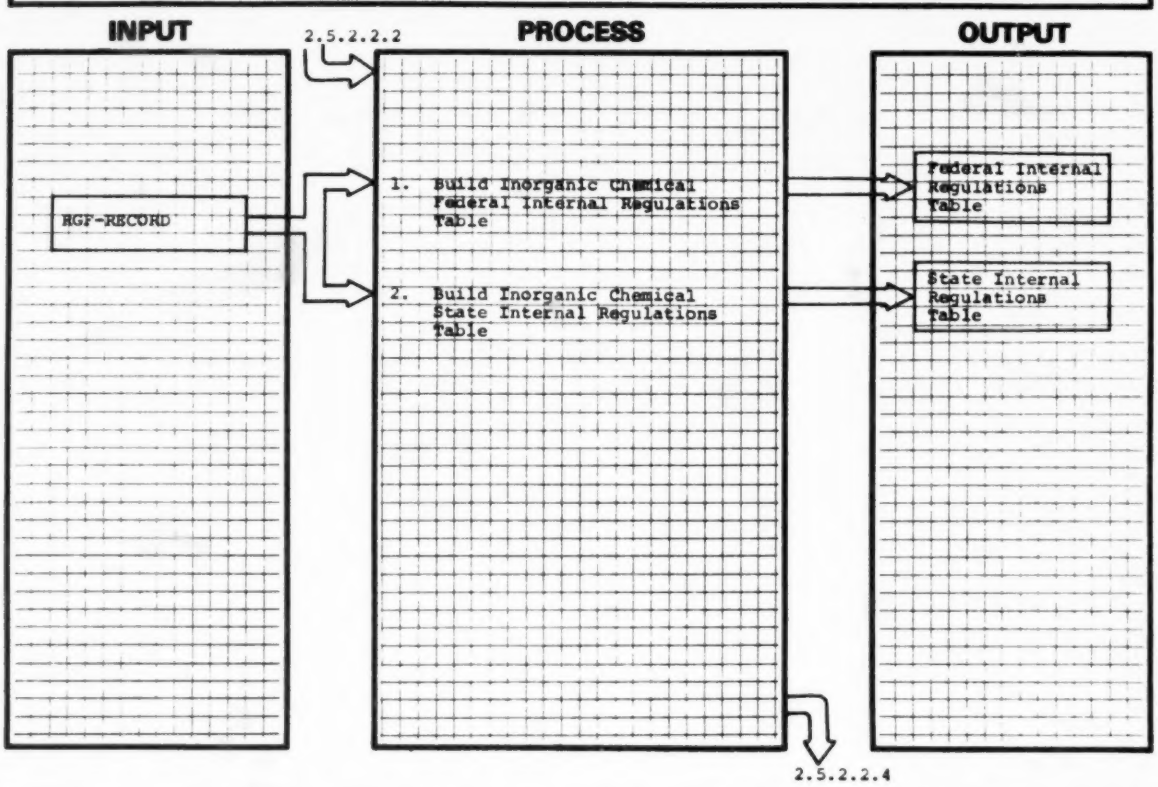


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of data element edit values for Contaminant ID. The records are stored in an internal CVT to be used later to provide the Contaminant Name. These edit values are contained in the common CVT having a file ID of 'MS'.		WAQC032	MSIS. 206 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.2.3 **Description:** Build Inorganic Chemical Internal Regulations Tables

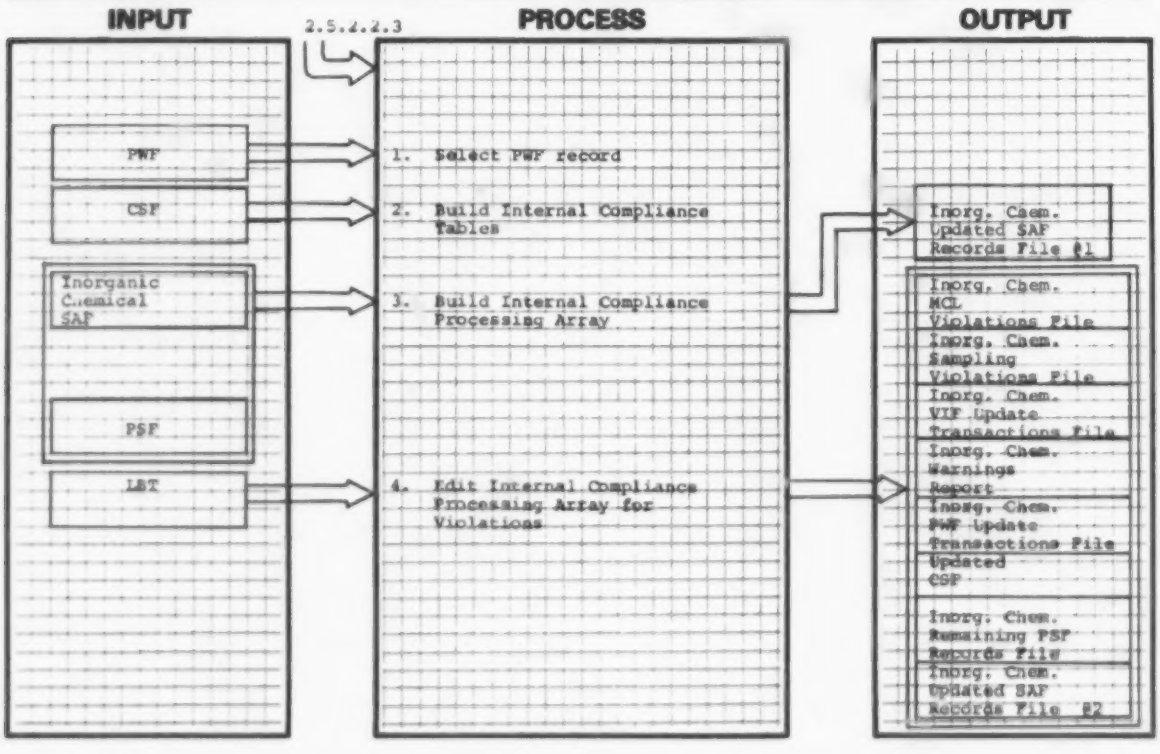


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Inorganic Chemical Federal Internal Regulations Table by selecting the following information from the Federal records on the Regulations File (RGF) with a Contaminant Group code of '1' (the first position of Contaminant ID) and storing internally: . Contaminant ID . MCL and MCL decimal . Reasonable MCL bounds (lower/higher) . Number of Check Samples Required if Regular Sample Violates the MCL . Special Computation . Maximum time to initiate second sample analysis after regular sample is in violation . All data specific to both a community/non-community PWS.		WAQC032	REGS. 250
2	Build the Inorganic Chemical State Internal Regulations Table by selecting the information shown in Step 1 above from the State records on the RGF with a Contaminant Group code of '1'. Note: The Federal RGF records have the value of 'FP' in the REGU-LEVEL field; while the State RGF records have the value of 'SP' in the REGU-LEVEL field.		WAQC033	REGS. 250

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.2.4 **Description:** Edit Inorganic Chemical Violations

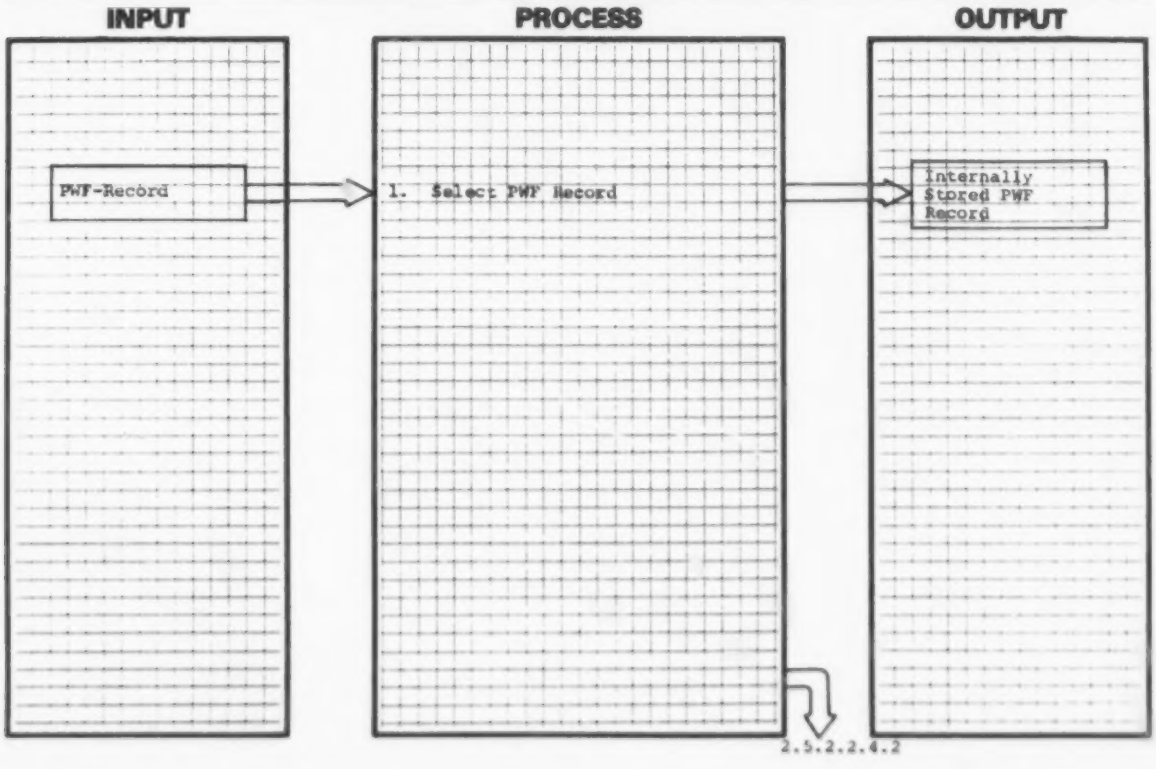


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) record and store internally.	2.5.2.2.4.1	WAQC032	
2	Build the Internal Compliance Tables of edit values from the internally stored PWF record from Step 1, the Compliance Status File (CSF) and the Internal Regulations Tables.	2.5.2.2.4.2	WAQC032	
3	Build the Internal Compliance Processing Array from sample records from the Organic Chemical Sample Analysis File (SAF) and the Periodic Sample File (PSF). Inorganic Chemical sample records not to be used in processing violations are copied directly to the Organic Chemical SAF.	2.5.2.2.4.3	WAQC032	
4	Edit the Internal Compliance Processing Array for violations against the Internal Compliance Tables built in Step 2. Violations result in the creation of Maximum Contaminant Level (MCL) or Sampling Violation records and the creation of Violations File (VIF) Update transactions. Certain situations will result in the production of Warnings Report messages instead of violation records or transactions. The cancellation of an MCL violation (when followup monitoring is no longer required) results in the creation of PWF Update transactions. Changes in the violation status of the Public Water System (PWS) result in the updating of the CSF. Those PSF sample records not processed for violations are copied to the remaining PSF, while all others, and the old SAF records, are copied to the Updated SAF. The Laboratory Table (LBT) is used to provide the Lab Name for the violation records. Note: See Appendix A.7 for Compliance Overview	2.5.2.2.4.4	WAQC032	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1

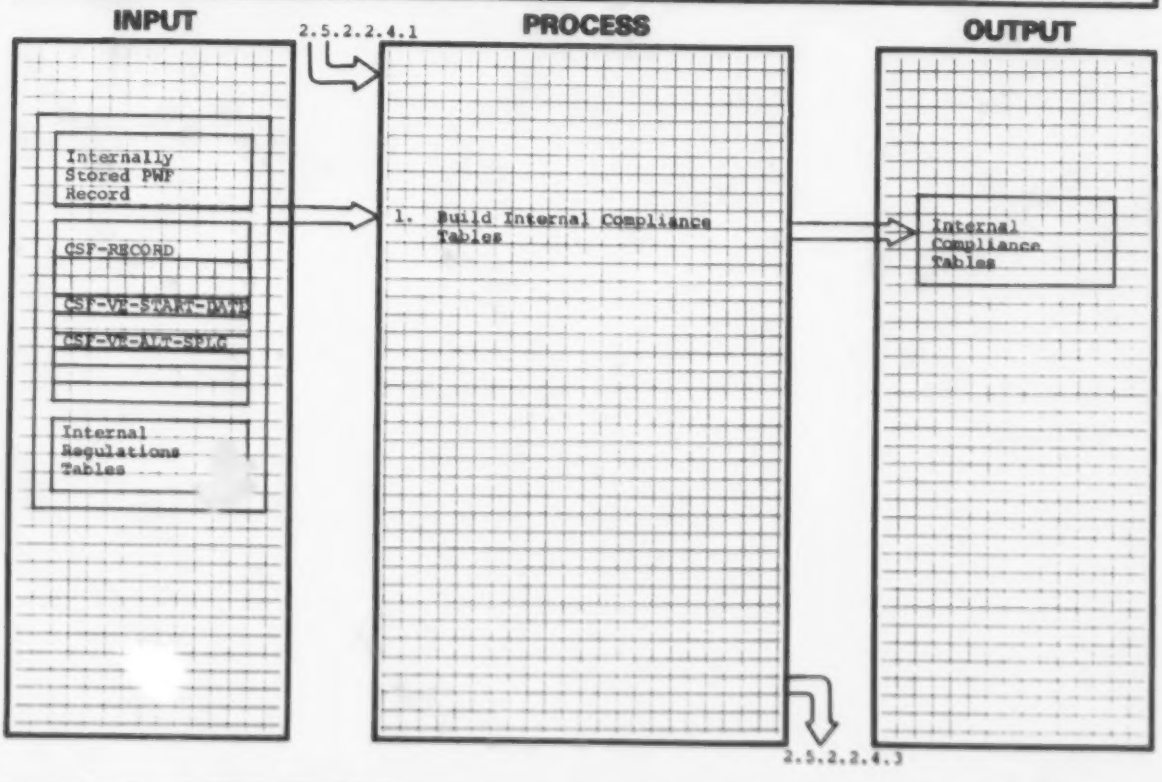
Diagram No.: 2.5.2.2.4.1 **Description:** Select PWF Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) records needed for Inorganic Chemical Compliance and store internally. See Appendix B.2 for details.		MAQC032	PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1
Diagram No.: 2.5.2.2.4.2 **Description:** Build Internal Compliance Tables

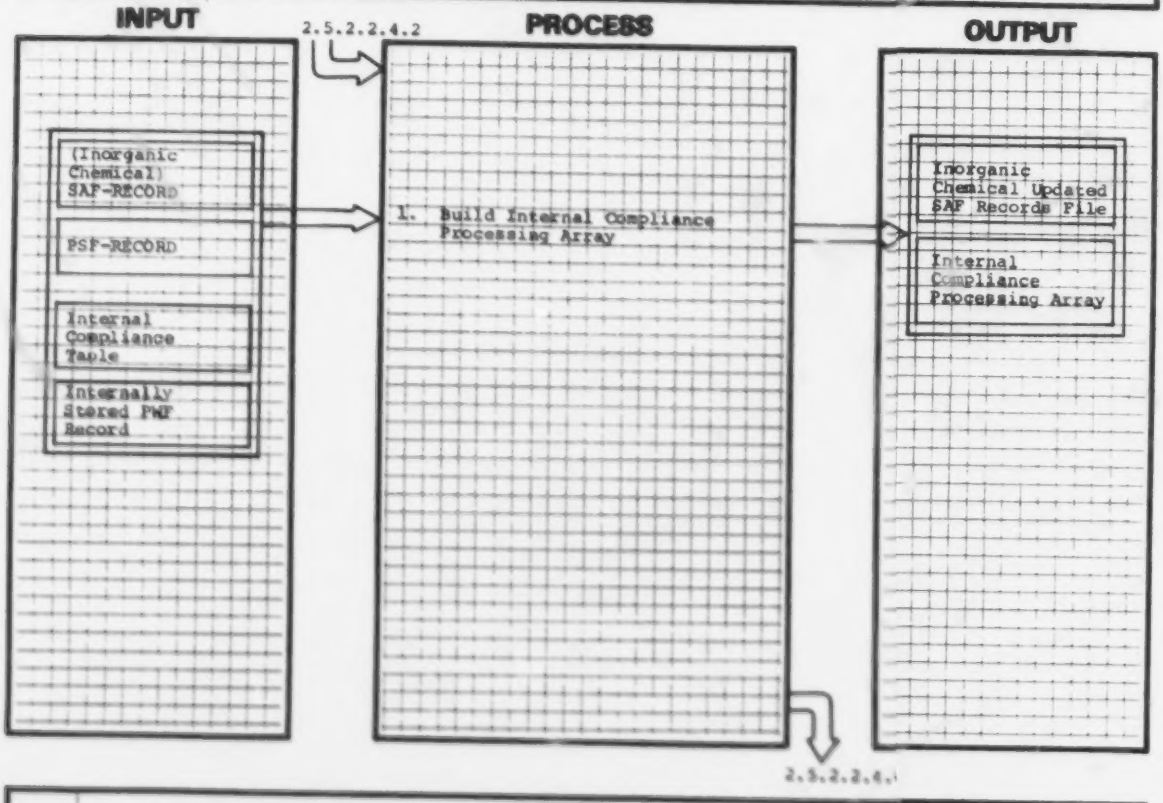


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the [illegible] mpliance Tables for each Contaminant-ID being processed i [illegible] following manner: a. Information pertaining to the Contaminant-ID being processed is copied from the Internal Regulations Tables into the Internal Compliance Tables. b. Inform [illegible] is added to the Internal Compliance Tables from the Internally Stored Public Water File (PWF) record as it pertains to the contaminant. c. The Internal Compliance Tables are modified by any Variance or Exemption information in the internally stored PWF record and the Compliance Status File (CSF) record for the Contaminant-ID being processed. See Appendix C.2 for details.		WAQC032	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1

Diagram No.: 2.5.2.2.4.3 **Description:** Build Internal Compliance Processing Array

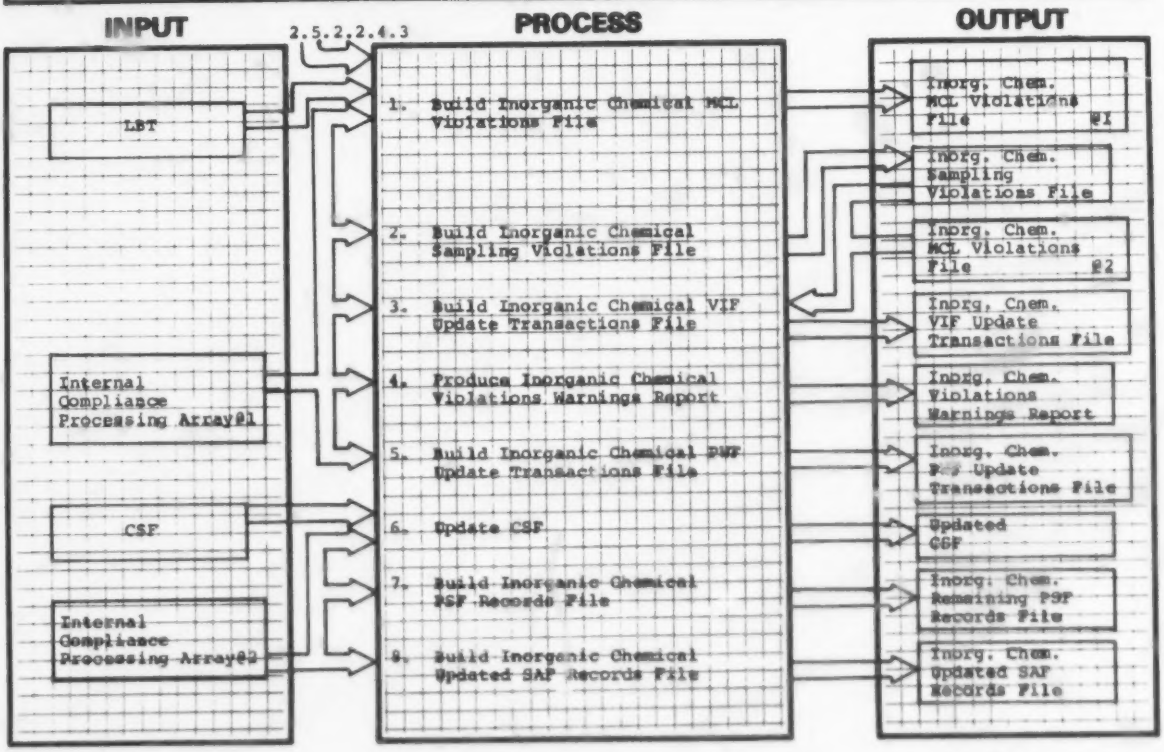


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Compliance Processing Array from those sample records selected from the Inorganic Chemical Sample Analysis File (SAF) and Periodic Sample File (PSF) for use in processing Maximum Contaminant Level (MCL) and Sampling Violations. Those Inorganic Chemical PSF records or Inorganic Chemical SAF records not used in processing violations, as determined by information in the Internal Compliance Tables and the internally stored Public Water File (PWF) record, are copied to the Inorganic Chemical Updated SAF Records File without violation processing. See Appendix D.2 for details.		WAQC032	254 252

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1

Diagram No.: 2.5.2.2.4.4 **Description:** Edit Internal Compliance Processing Array for Violations

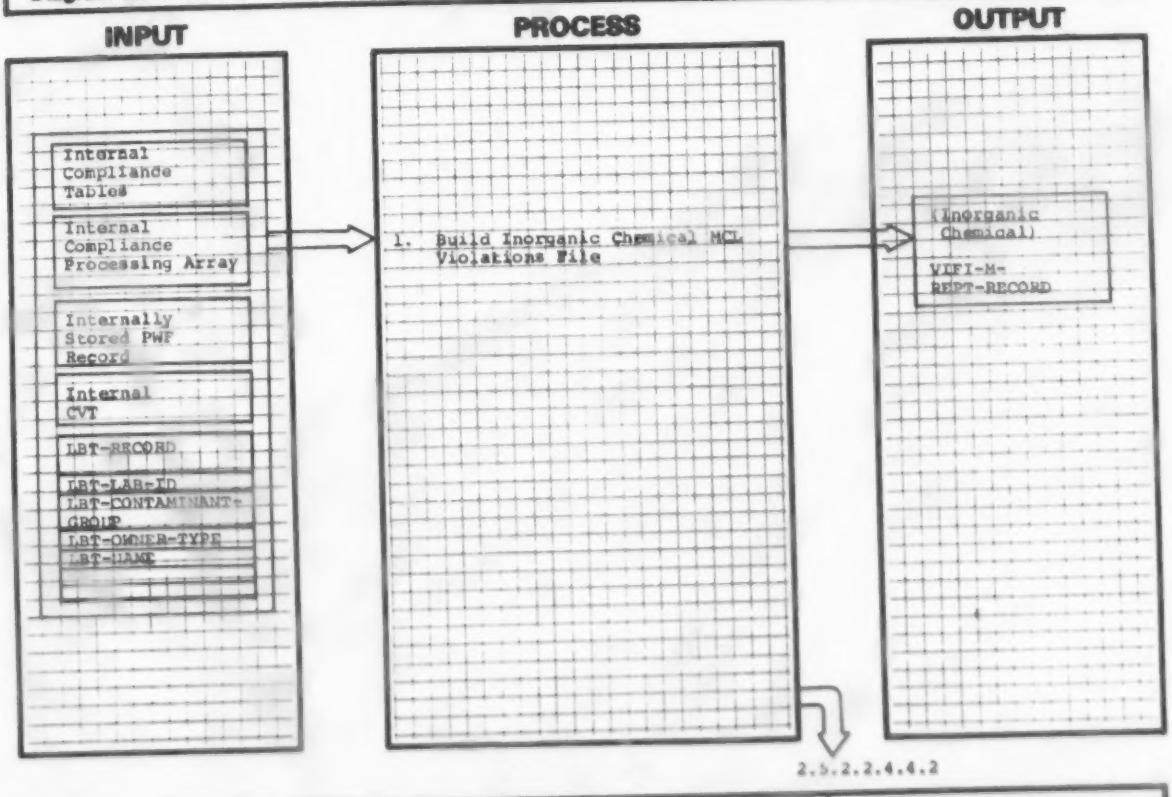

INPUT
2.5.2.2.4.3
PROCESS
OUTPUT
LBT
Internal Compliance Processing Array#1
CSF
Internal Compliance Processing Array#2
1. Build Inorganic Chemical MCL Violations File
2. Build Inorganic Chemical Sampling Violations File
3. Build Inorganic Chemical VIF Update Transactions File
4. Produce Inorganic Chemical Violations Warnings Report
5. Build Inorganic Chemical PWF Update Transactions File
6. Update CSF
7. Build Inorganic Chemical PSF Records File
8. Build Inorganic Chemical Updated SAF Records File
Inorg. Chem. MCL Violations File #1
Inorg. Chem. Sampling Violations File
Inorg. Chem. MCL Violations File #2
Inorg. Chem. VIF Update Transactions File
Inorg. Chem. Violations Warnings Report
Inorg. Chem. PWF Update Transactions File
Updated CSF
Inorg. Chem. Remaining PSF Records File
Inorg. Chem. Updated SAF Records File

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The Internal Compliance Processing Array is edited against the Internal Compliance Tables for Maximum Contaminant Level (MCL) and Sampling violations. The edits result in the creation of several records depending on the particular circumstances:			
1	Internal Compliance Processing Array (CPA) recor in violation of MCL requirements cause Inorganic Chemical MCL Violations File records to be built.	2.5.2.2.4.4.1	WAQC032	
2	Internal CPA missing records cause Inorganic Chemical Sampling Violations File records to be built.	2.5.2.2.4.4.2	WAQC032	
3	Either MCL or Sampling violations also cause Inorganic Chemical Violations File (VIF) Update transactions records to be built.	2.5.2.2.4.4.3	WAQC032	
4	Certain situations will produce messages in the Inorganic Chemical Warnings Report instead of the violation records in Steps 1, 2, and 3.	2.5.2.2.4.4.4	WAQC032	
5	The cancellation of MCL violations results in the creation of Inorganic Chemical PWF Update Transaction File records.	2.5.2.2.4.4.5	WAQC032	
6	Changes in violation status of the Public Water System (PWS) cause the Compliance Status File (CSF) record to be updated.	2.5.2.2.4.4.6	WAQC032	
7	Those Periodic Sample File (PSF) Inorganic Chemical records not used for processing violations are copied to the Inorganic Chemical Remaining PSF Records file.	2.5.2.2.4.4.7	WAQC032	
8	Those PSF records used for compliance and the Sample Analysis File (SAF) records stored in the Internal Compliance Processing Array are copied to the Inorganic Chemical Updated SAF Records File.	2.5.2.2.4.4.8	WAQC032	
	NOTE: See Appendix E.1 for details of violation processing.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/7/77 Page: 1 of 2

Diagram No.: 2.5.2.2.4.4.1 Description: Build Inorganic Chemical MCL Violations File



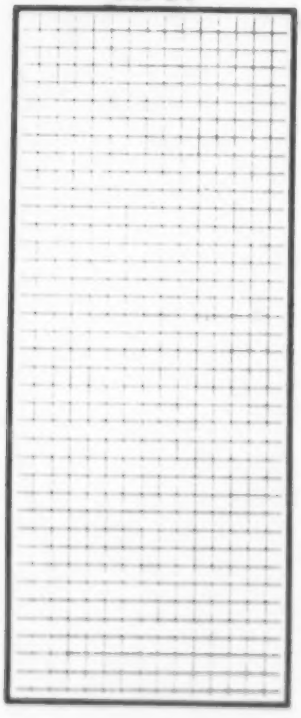
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Inorganic Chemical Maximum Contaminant Level (MCL) Violations File records, VIFI-M-REPT-RECORD, from the Inorganic Chemical Internal Compliance Processing Array sample records flagged as being in violation of MCL requirements. The VIFI-M-REPORT-RECORDS are passed to program WAQC040 (HIPO 2.5.4.1.2) to be used to produce the Chemical MCL Violations Report. The VIFI-M-VIOLATION-TYPE field is set to '01'. The remainder of the fields in the VIFI-M-REPORT-RECORD, as listed below, are filled from the sources indicated: From the Internally Stored Public Water File (PWF) Record: VIFI-M-PWS-NAME VIFI-M-POPULATION VIFI-M-REGION VIFI-M-PWS-TYPE VIFI-M-SOURCE-CODE VIFI-M-DISTRICT From the Internal Code Value Table (CVT): VIFI-M-CONTAMINANT-NAME From the Internal Compliance Tables: VIFI-M-MCL-VIOLATED VIFI-M-MCL-VIOL-DECIMALS Internally generated: VIFI-M-REGULATION-LEVEL VIFI-M-VIOLATION-DATE VIFI-M-VIOLATION-DURATION		WAQC032	216 250 256

MODEL STATE INFORMATION SYSTEM

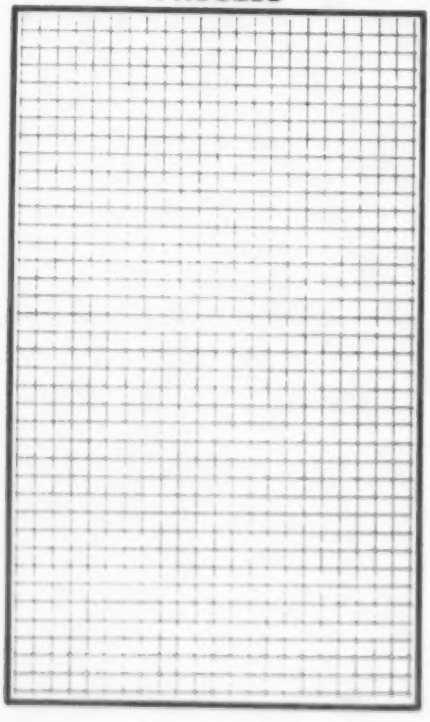
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/7/77 Page: 2 of 2

Diagram No.: 2.5.2.2.4.4.1 Description: Build Inorganic Chemical MCL Violations File

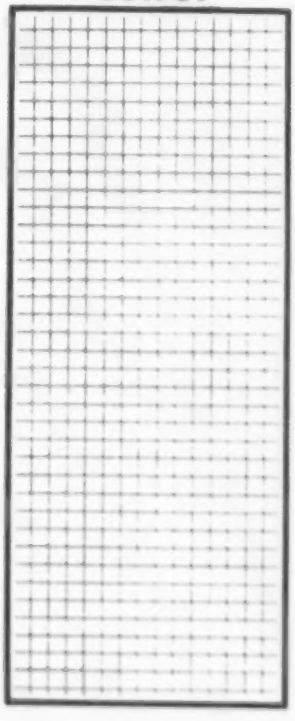
INPUT



PROCESS



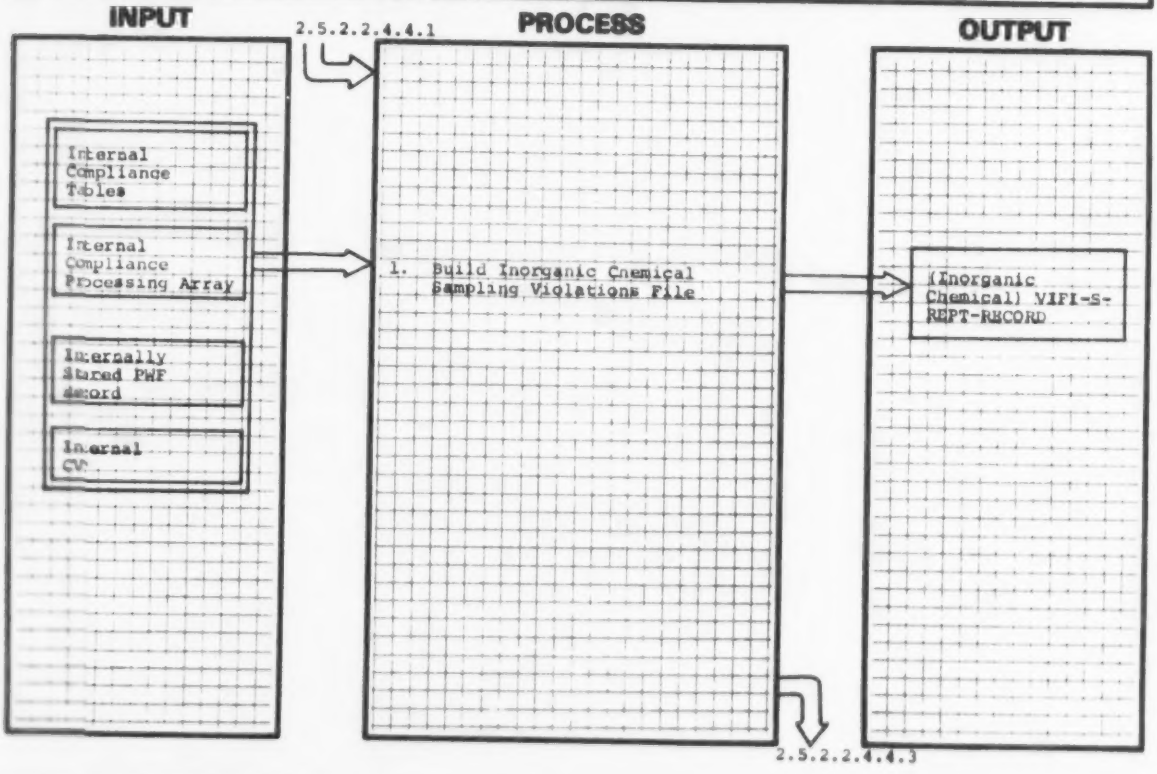
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	From the Internal Compliance Array: VIFI-M-PWS-ID VIFI-M-CONTAMINANT-ID VIFI-M-LAB-ID VIFI-M-SAMPLE-DATE VIFI-M-ANALYSIS-METHOD VIFI-M-ANALYSIS-RESULT VIFI-M-ANALYSIS-DECIMALS VIFI-M-ANALYSIS-DATE VIFI-M-SAMPLE-TYPE From the Laboratory Table (LAT): VIFI-M-LAB-NAME Note: (1) All other VIFI-M-REPT-RECORD fields not mentioned here, if alphabetic, are set to blank; if numeric, are set to zero. (2) When copying the value for VIFI-M-SOURCE-CODE from the internal PWF record, check all available PWF-PLANT-SOURCE-CODE fields. If any are 'S' or 'P', then set the value of VIFI-M-SOURCE-CODE to 'S' (surface); otherwise set the value to 'G' (ground).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 2
Diagram No.: 2.5.2.2.4.4.2 **Description:** Build Inorganic Chemical Sampling Violations File



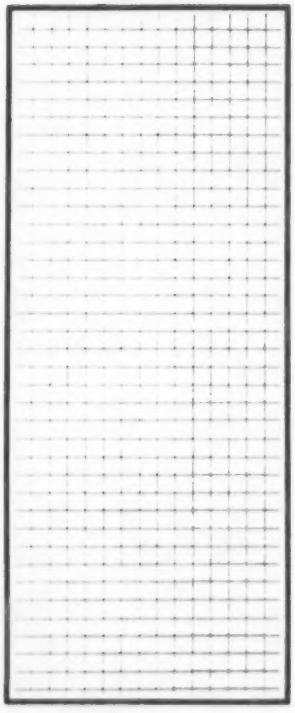
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Inorganic Chemical Sampling Violations File records, VIFI-S-REPT-RECORD, from information in the Inorganic Chemical Internal Compliance Processing Array (CPA) indicating regular sampling or check sampling violations. The VIFI-S-REPORT-RECORDS are passed to program WAQC060 (HIPO 2.5.4.2.2) to be used to produce the Chemical Sampling Violations Report. The VIFI-S-VIOLATION-TYPE field is set to '03' if the violation is of regular sampling requirements, or to '04' if the violation is of check sampling requirements. The remainder of the fields in the VIFI-R-REPORT-RECORD, as listed below, are filled from the sources indicated: From the Internally Stored Public Water File (PWF) Record: VIFI-S-PWS-NAME VIFI-S-POPULATION VIFI-S-REGION VIFI-S-PWS-TYPE VIFI-S-SOURCE-CODE VIFI-S-DISTRICT From the Internal Code Value Table (CVT): VIFI-S-CONTAMINANT-NAME From the Internal Compliance Tables: VIFI-S-SAMPLES-NUM-REQUIRED VIFI-S-SAMPLING-FREQ-VIOL Internally Generated: VIFI-S-REGULATION-LEVEL VIFI-S-VIOLATION-DURATION VIFI-S-VIOLATION-DATE VIFI-S-SAMPLES-NUM-TAKEN VIFI-S-SAMPLING-CUTOFF-DATE		WAQC032	231

MODEL STATE INFORMATION SYSTEM

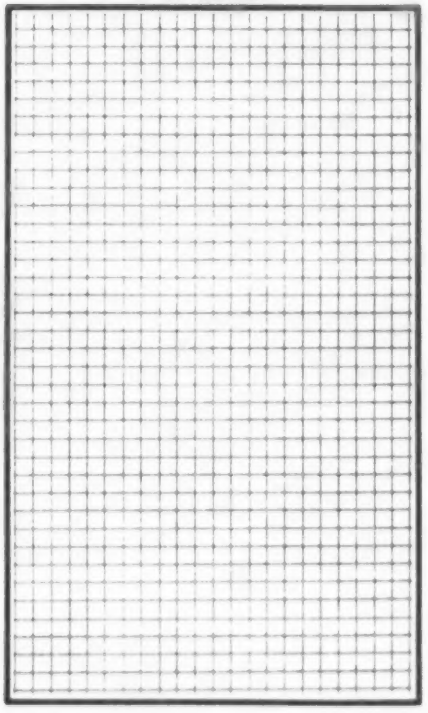
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/7/77 Page: 2 of 2

Diagram No.: 2.5.2.2.4.4.2 Description: Build Inorganic Chemical Sampling Violations File

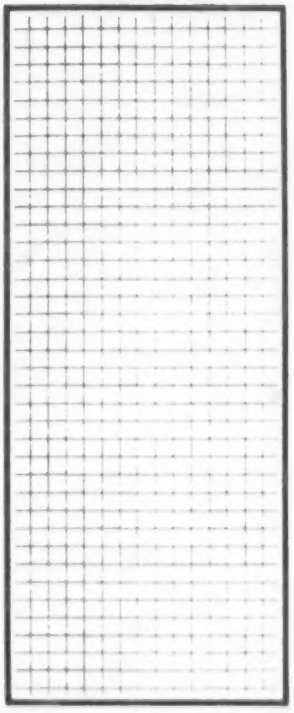
INPUT



PROCESS



OUTPUT

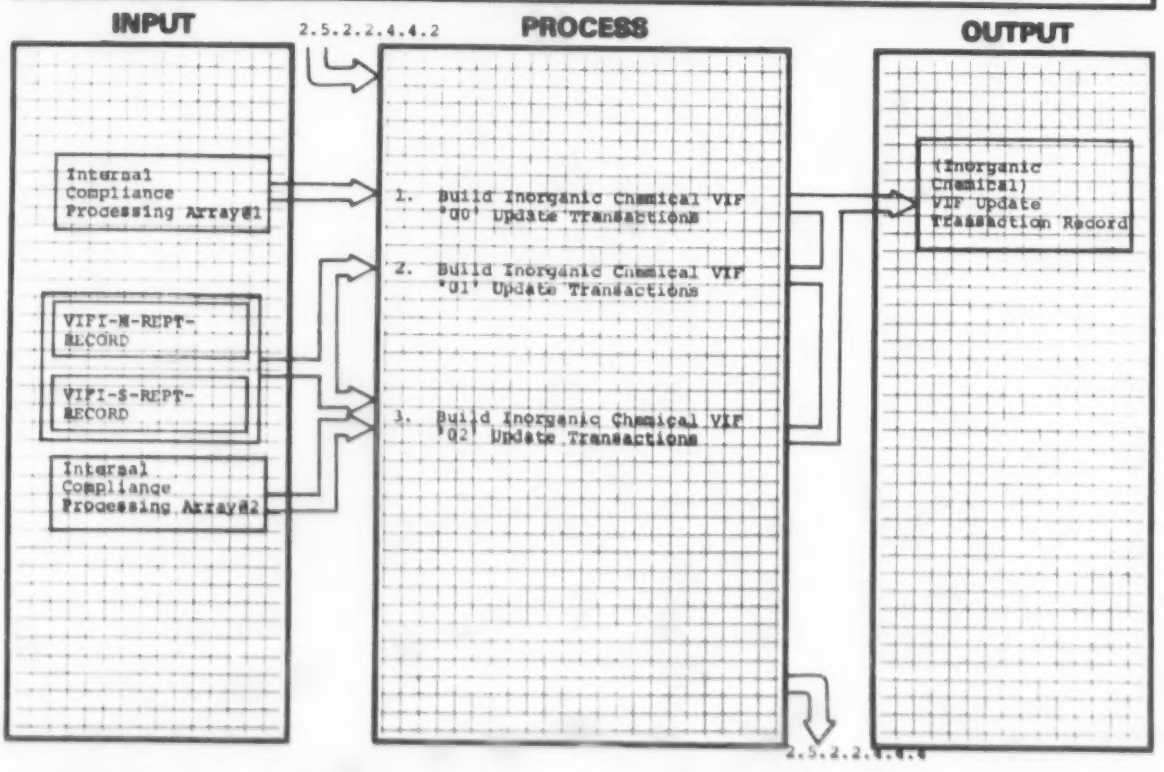


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	From the Internal Compliance Array: VIFI-S-PWS-ID VIFI-S-SAMPLE-DATE VIFI-S-CONTAMINANT-ID VIFI-S-SAMPLE-TYPE Notes: (1) All other VIFI-S-REPT-RECORD fields not mentioned here, if alphabetic, are set to blank, if numeric, are set to zero. (2) When copying the value for VIFI-S-SOURCE-CODE from the internal Public Water File (PWF) record, check all available PWF-PLANT-SOURCE-CODE fields. If any are 'S' or 'P', then set the value of VIFI-S-SOURCE-CODE to 'S' (surface); otherwise set the value to 'G' (ground).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1

Diagram No.: 2.5.2.2.4.4.3 **Description:** Build Inorganic Chemical VIF Update Transactions File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Inorganic Chemical Violations File (VIF) Update transaction record with code = '00' in positions 6-7.	2.5.2.2.4.4.3.1	WAQC031	
2	Build the Inorganic Chemical VIF Update transaction record with code = '01' in positions 6-7.	2.5.2.2.4.4.3.2	WAQC031	
3	Build the Inorganic Chemical VIF Update transaction record with code = '02' in positions 6-7.	2.5.2.2.4.4.3.3	WAQC031	
	Note: These transaction records are built only if violations were determined in HIPO 2.5.2.3.4.4.1 or 2.5.2.3.4.4.2. All three transactions are built for each Federal Maximum Contaminant Level (MCL) Violation, each State MCL violation, each Federal Sampling Violation, and each State Sampling Violation.			

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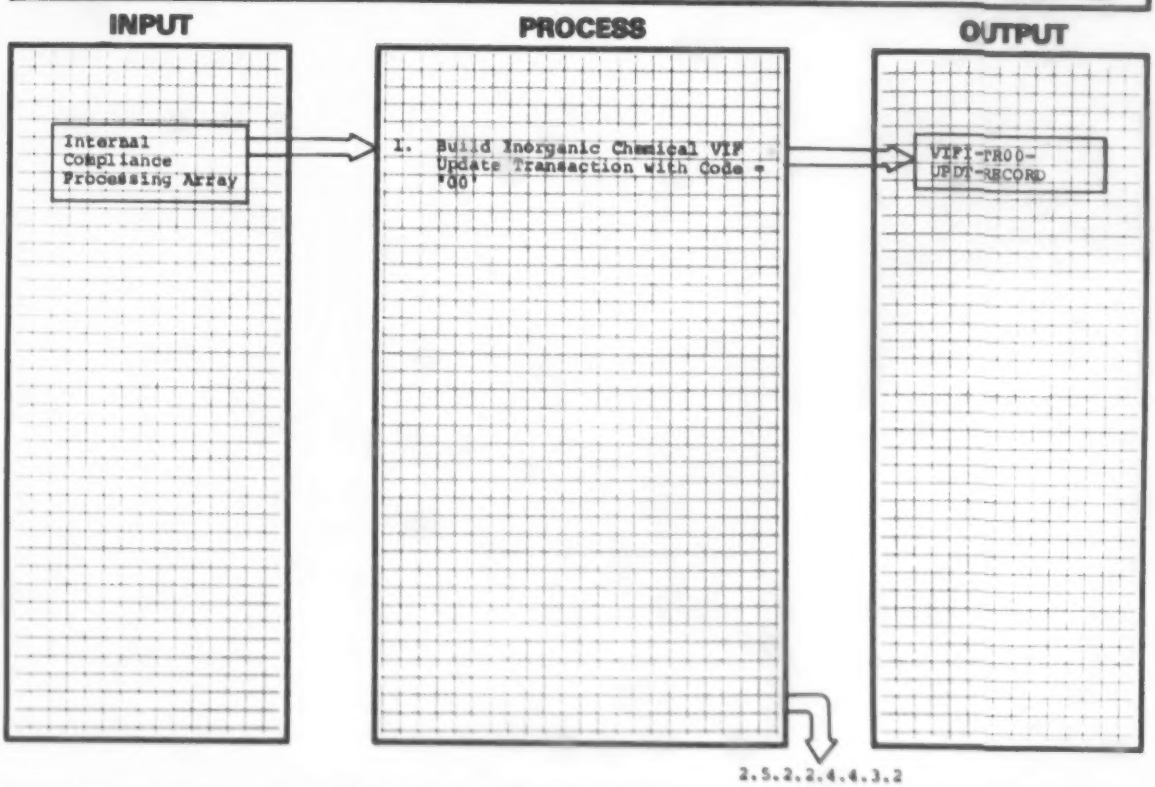
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1
Diagram No.: 2.5.2.2.4.4.3.1 **Description:** Build Inorganic Chemical VIF '00' Update Transactions



STEP	EXTENDED DESCRIPTION	REFERNCES		
		HIPO	PROGRAM	OTHER
1	If the Internal Compliance Processing Array has Maximum Contaminant Level (MCL) or Sampling violations, as determined in HIPO's 2.5.2.3.4.4.1 and 2.5.2.3.4.4.2, the Violations File (VIF) Update Transaction record to create a new VIF record is built as follows: VIFI-TR00-VIOLATION-ID is set to blank. VIFI-TR00-TRANSACTION-CODE is set to '00' VIFI-TR00-CREATE-DELETE-FLAG is set to 'Y'		WQC032	223

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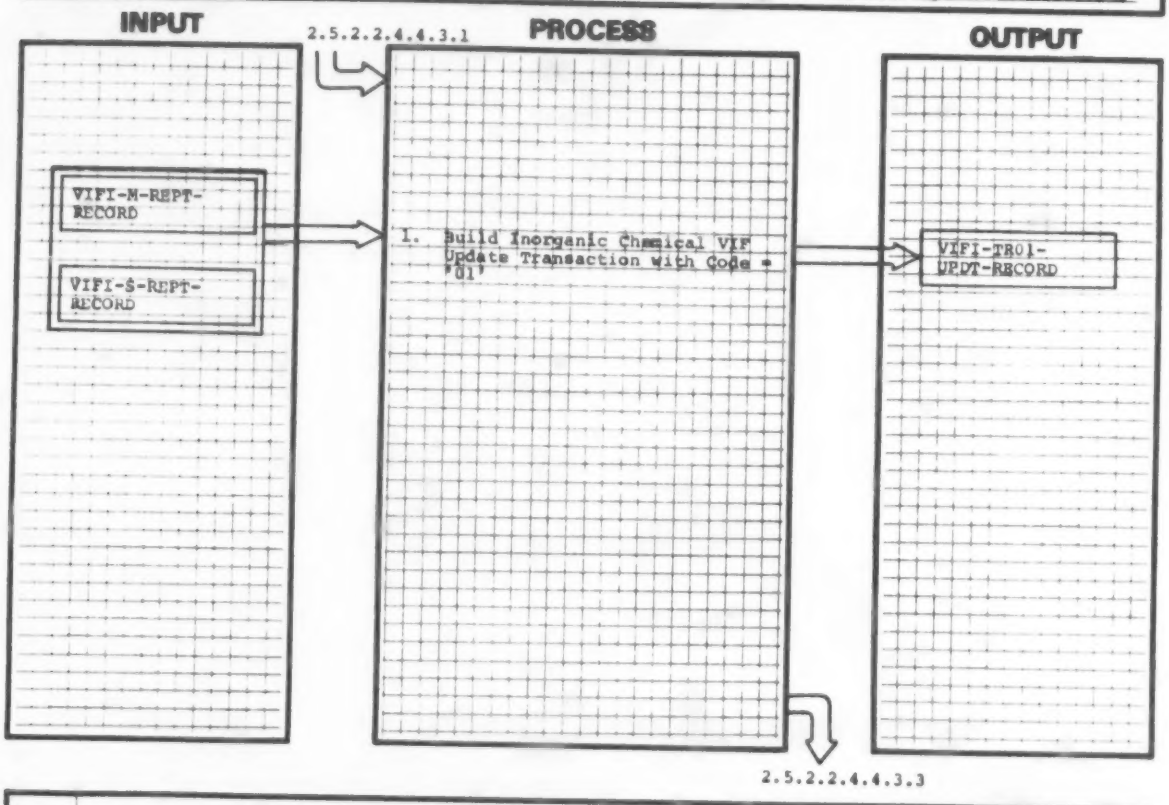
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1
Diagram No.: 2.5.2.2.4.4.3.2 **Description:** Build Inorganic Chemical VIF '01' Update Transactions

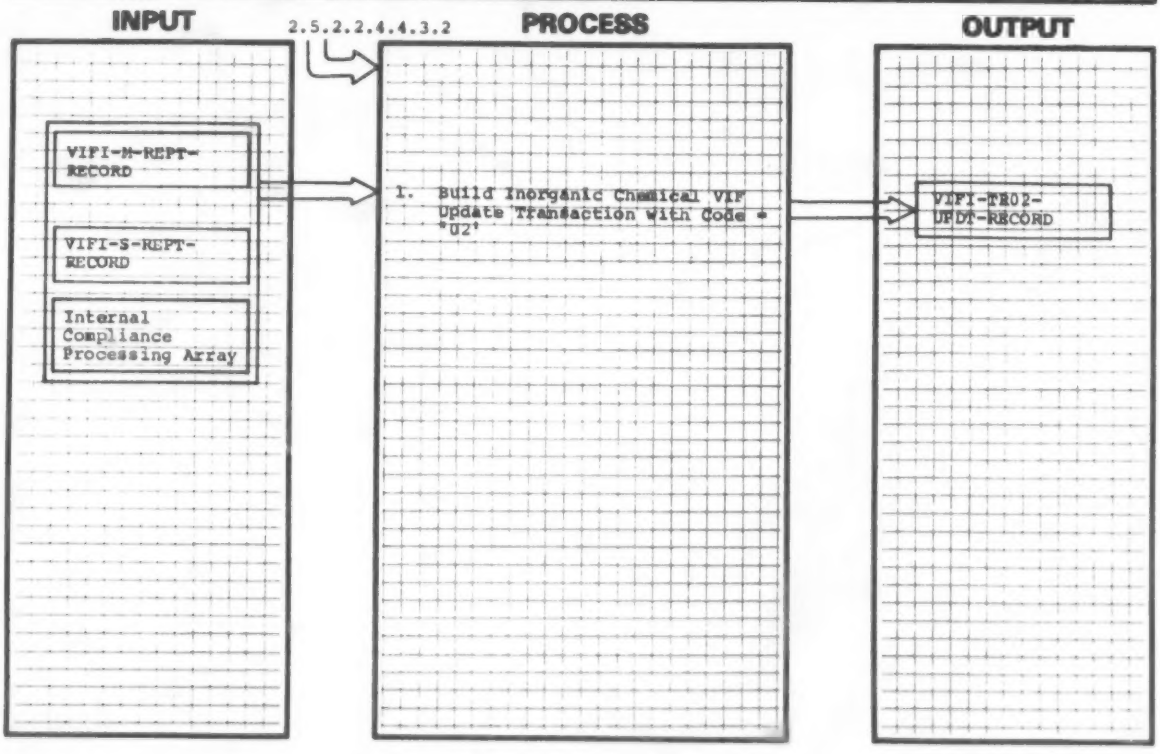


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the transaction code = '00' record was built in HIPO 2.5.2.2.4.4.3.1, then build the Violations File (VIF) Update Transaction code = '01' record to build the new VIF record as follows: The VIFI-TR01-VIOLATION-ID is set to blanks. The VIFI-TR01-TRANSACTION-CODE is set to '01' For Maximum Contaminant Level (MCL) violations, the remaining fields of the VIFI-TR01-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-M-REPT-RECORD built in HIPO 2.5.2.2.4.4.1. For Sampling violations, the remaining fields of the VIFI-TR01-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-S-REPT-RECORD built in HIPO 2.5.2.2.4.4.2.		WAQC032	224 216 231

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.2.4.4.3.3 **Description:** Build Inorganic Chemical VIF '02' Update Transactions

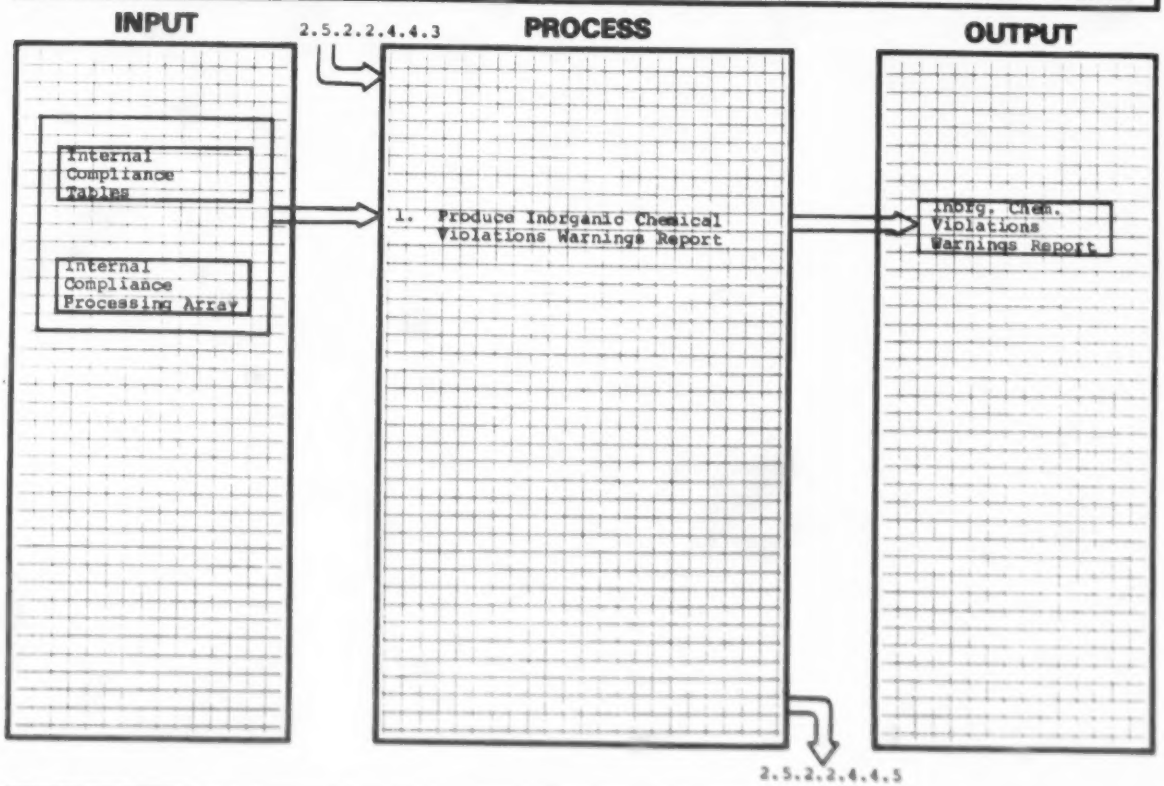


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the transaction code = '00', record was built in HIPO 2.5.2.2.4.4.3.1, then use the Violations File (VIF) Update transaction code = '02' record to build the new VIF record as follows: The VIFI-TR02-VIOLATION-ID is set to blanks. The VIFI-TR02-TRANSACTION-CODE is set to '02' For Maximum Contaminant Level (MCL) violations, the remaining fields of the VIFI-TR02-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-M-REPT-RECORD built in HIPO 2.5.2.2.4.4.1. For sampling violations, the remaining fields of the VIFI-TR02-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-S-REPT-RECORD built in HIPO 2.5.2.2.4.4.2. The VIFI-TR02-SAMPLE-KEY field is filled from the PSP-SAMPLE-KEY in the Internal Compliance Processing Array record.		WAQC032	225 216 231

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.2.4.4.4 **Description:** Produce Inorganic Chemical Violations Warnings Report

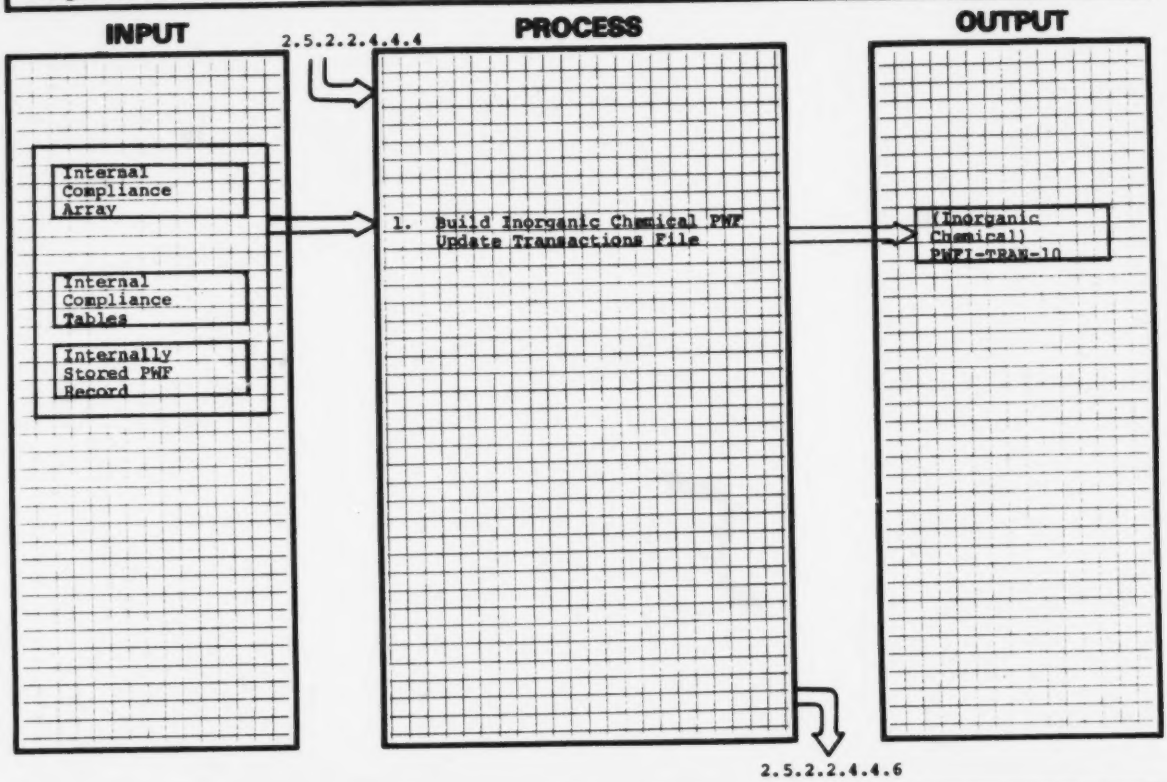


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Due to enactment or cancellation of a sampling Variance or Exemption, as shown in the Internal Compliance Tables, the Public Water System (PWS) is considered to be 'in transition' either into, in the case of enactment, or out of, in the case of cancellation, a Variances and Exemptions Sampling period. In either case, the contaminants of the PWS are checked for sampling violations as in HIPO 2.5.2.2.4.4.2 but instead of Sampling violations, messages are produced on the Inorganic Chemical warnings Report. If regular sampling violations are detected, the message is 'No Rglr Spls taken within the period XX/XX/XX to XX/XX/XX'. If check sampling violations are detected, the message is 'No Check Spls taken within the period XX/XX/XX to XX/XX/XX'.		WAQC032	326

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

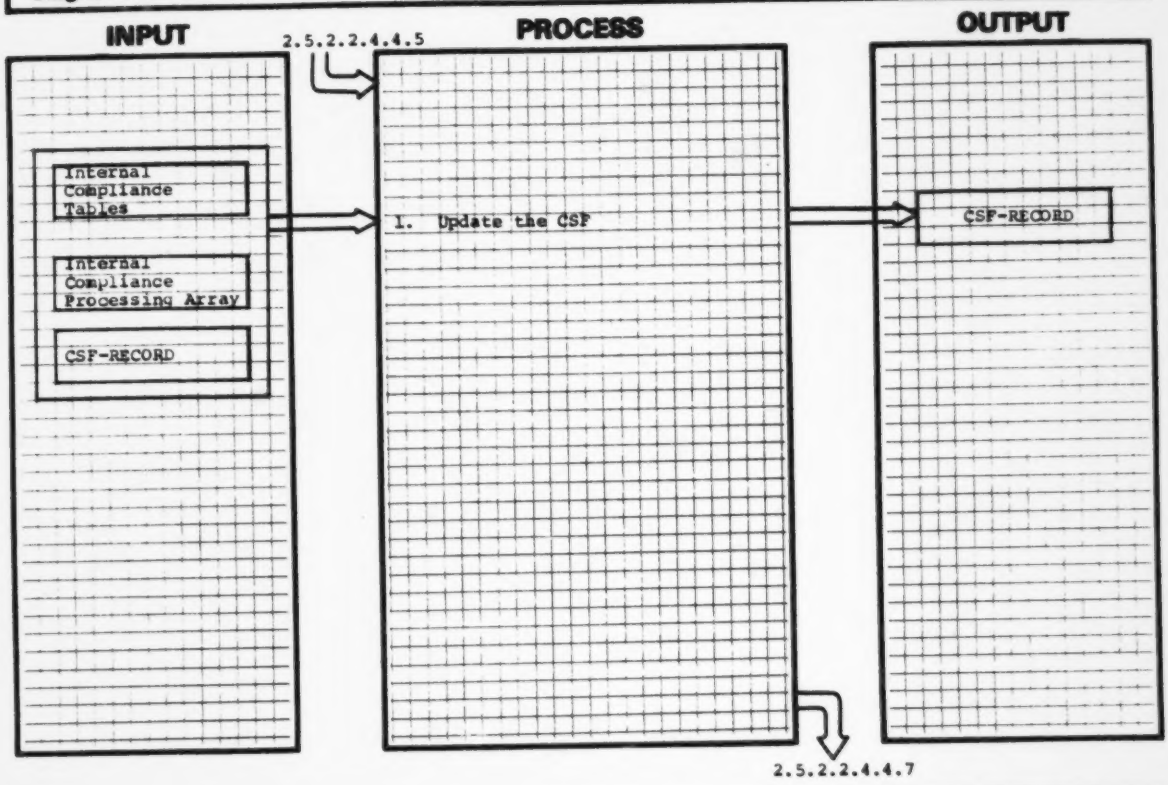
Diagram No.: 2.5.2.2.4.4.5 **Description:** Build Inorganic Chemical PWF Update Transactions File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If a Maximum Contaminant Level (MCL) violation is cancelled, a transaction record is produced to reinitialize the Followup-Monitoring fields in the Public Water File (PWF) for that contaminant and Public Water System (PWS). The PWFI-ID10 field is set to the ID code of the PWS. The PWFI-TRAN-CODE10 field is set to '10'. The PWFI-OCCURANCE10 field is set to the position (1-4) of the Followup-Monitoring fields in the array within the Internally Stored PWF record which matches the fields to be changed in the Internal Compliance Tables. The PWFI-STATE-CONTAMINANT-ID-CHEM and PWFI-STATE-SAMPLING-FREQUENCY fields are set to a '$' followed by blanks.		WAQC032	PWSI. 223 PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1
Diagram No.: 2.5.2.2.4.4.6 **Description:** Update CSF

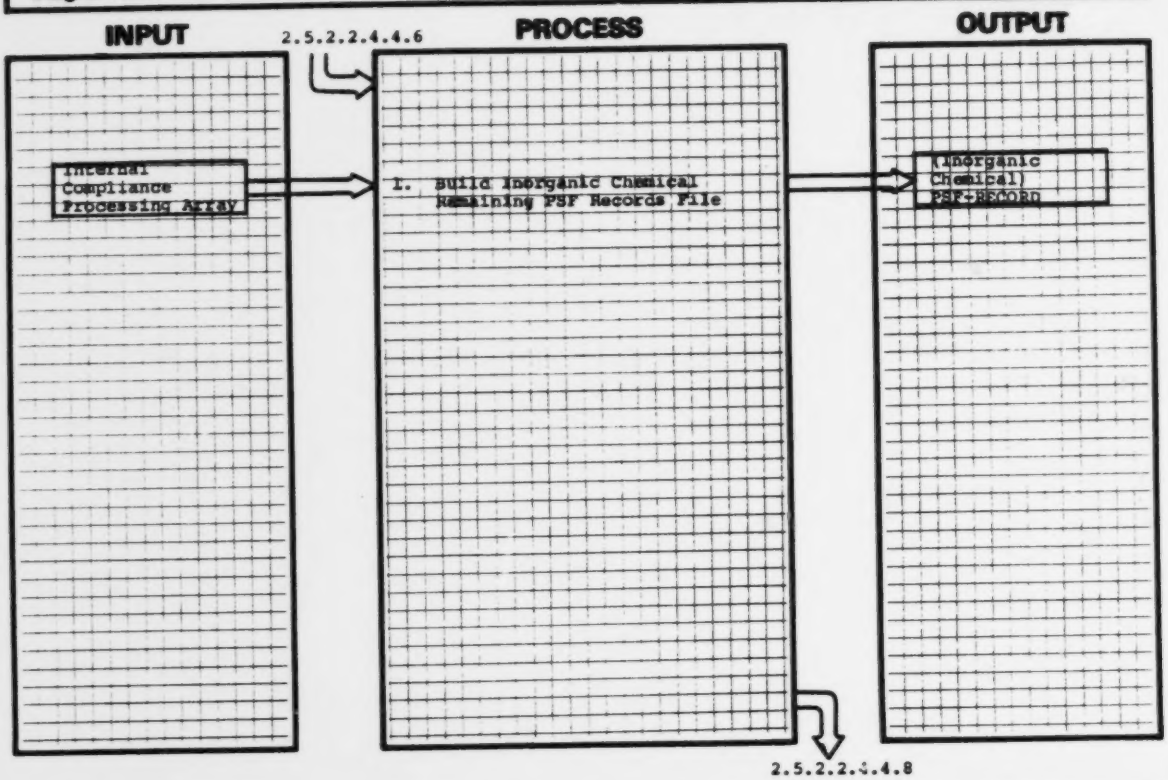


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Compliance Status File (CSF) is updated for each contaminant whenever the following changes occur: a. Federal Regular Sampling Period change b. State Regular Sampling Period change c. Federal Check Sampling Period change d. State Check Sampling Period change e. Maximum Contaminant Level (MCL) or Sampling Variance or Exemption Enactment, change or cancellation. See Appendix C.2 for details		WAQC032	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/7/77 Page: 1 of 1

Diagram No.: 2.5.2.2.4.4.7 Description: Build Inorganic Chemical Remaining PSF Records File

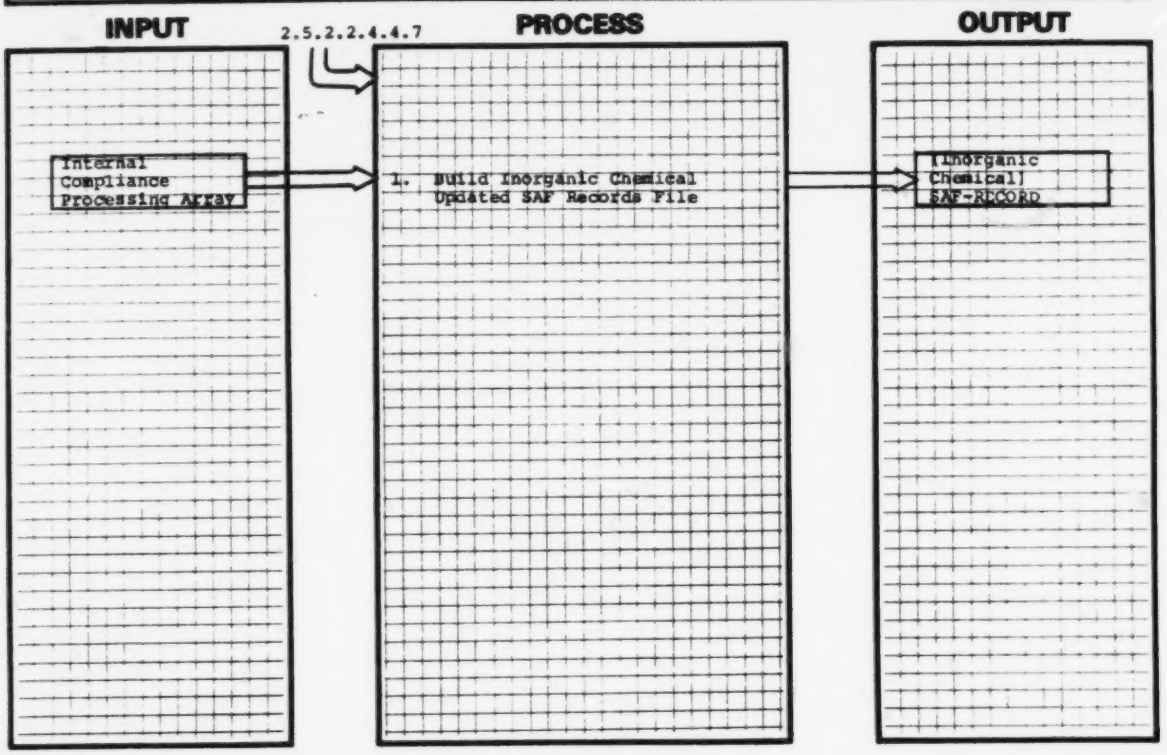


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Inorganic Chemical Remaining Periodic Sample File (PSF) Records, PSF-RECORD, from those Inorganic Chemical Internal Compliance Processing Array Sample records flagged to be copied to the PSF. The PSF-RECORD is built by copying data from those fields in the Internal Compliance Processing Array sample record which corresponds with the PSF-RECORD.		WAQC032	252

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.2.4.4.8 **Description:** Build Inorganic Chemical Updated SAF Records File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Inorganic Chemical Updated Sample Analysis File (SAF) Records, SAF-RECORD, from those Organic Chemical Internal Compliance Processing Array (CPA) sample records flagged to be copied to the SAF. The SAF-RECORD is built by two methods, depending on the source of the Internal Compliance Processing Array sample record: a. From the SAF: simply copy those fields in the Internal CPA sample record which correspond with the SAF-RECORD. b. From the PSF: first copy those fields in the Internal CPA sample record which corresponds with the PSF-RECORD to the same fields in the SAF-RECORD; then, generate the remainder of the SAF-RECORD fields internally, based on values and flags in the Internal CPA sample record.		WAQC032	252 254

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NUMBER: WAQC033
DATE: March 7, 1977

I. OBJECTIVES:

This program edits the Organic Chemicals Records from the Contaminant Sample Analysis File (SAF) and the Periodic Sample File (PSF) for Maximum Contaminant Level (MCL) and Sampling violations. The MCL violations are used to build the Organic Chemical MCL (Violations File) which is passed to WAQC040. The sampling violations are used to produce the Organic Chemical Sampling Violations File which is passed to WAQC060. Both MCL and sampling violations are used to produce the Organic Chemicals VIF Update Transactions File which is passed to WAQC120.

This program also builds the Organic Chemicals Remaining PSF and the Organic Chemicals Updated SAF.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Organic Chemicals Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
2.	Periodic Sample File	PSF-HEADER-RECORD	WAQC.251
		PSF-RECORD	WAQC.252
3.	Public Water File	PWF-RECORD	PWSI.200
4.	Compliance Status File	CSF-RECORD	WAQC.257
5.	Regulations File	RGF-CHEM-RECORD	REGS.250
6.	Code Value Table	CVT-RECORD	MSIS.206
7.	Laboratory Table	LBT-RECORD	WAQC.250
		LBT-HDR-RECORD	WAQC.256

B. Processing Options Record:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Compliance Status File	CSF-RECORD	WAQC.257
2.	Organic Chemicals Remaining Periodic Sample File	PSF-RECORD	WAQC.252
3.	Organic Chemicals Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
4.	Organic Chemicals MCL Violations File	VIFI-HEDR-REPT-RECORD	WAQC.213
		VIFI-M-REPT-RECORD	WAQC.216
5.	Organic Chemicals Sampling Violations File	VIFI-HEDR-REPT-RECORD	WAQC.213
		VIFI-S-REPT-RECORD	WAQC.231
6.	Organic Chemicals VIF Update Transactions File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225
7.	Organic Chemicals PWF Update Transactions File	PWFI-TRAN-10	PWSI.223

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Organic Chemical Warnings Report	WAQC.326

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify the Organic Chemical Sample Analysis File (SAF) header record by checking the date to determine if processing is to continue and what information is to be copied to the header records of the Organic Chemical Updated SAF Record, MCL Violations, and Sampling Violations Files.

2. Build the Internal Code Value Table (CVT) from the CVT.

3. Build the Organic Chemical Internal Regulations Tables from information extracted from the Regulations File (RGF).

4. Edit the Organic Chemical Samples from the Periodic Sample File (PSF) and the Organic Chemical SAF against information from the Compliance Status File (CSF), the Public Water File (PWF), and the Internal Regulations Tables. The edits can result in building Organic Chemical MCL Violation Records, Organic Chemical Sampling Violation Records, Organic Chemical Violations File (VIF) Update Transactions, Organic Chemical Public Water File (PWF) Update Transactions, Organic Chemical Violations Warnings Report messages, an Updated CSF, Organic Chemical Remaining PSF Records, and Organic Chemicals Updated SAF Records. The Laboratory Table (LBT) is used to provided the Lab Name for the MCL Violations File.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

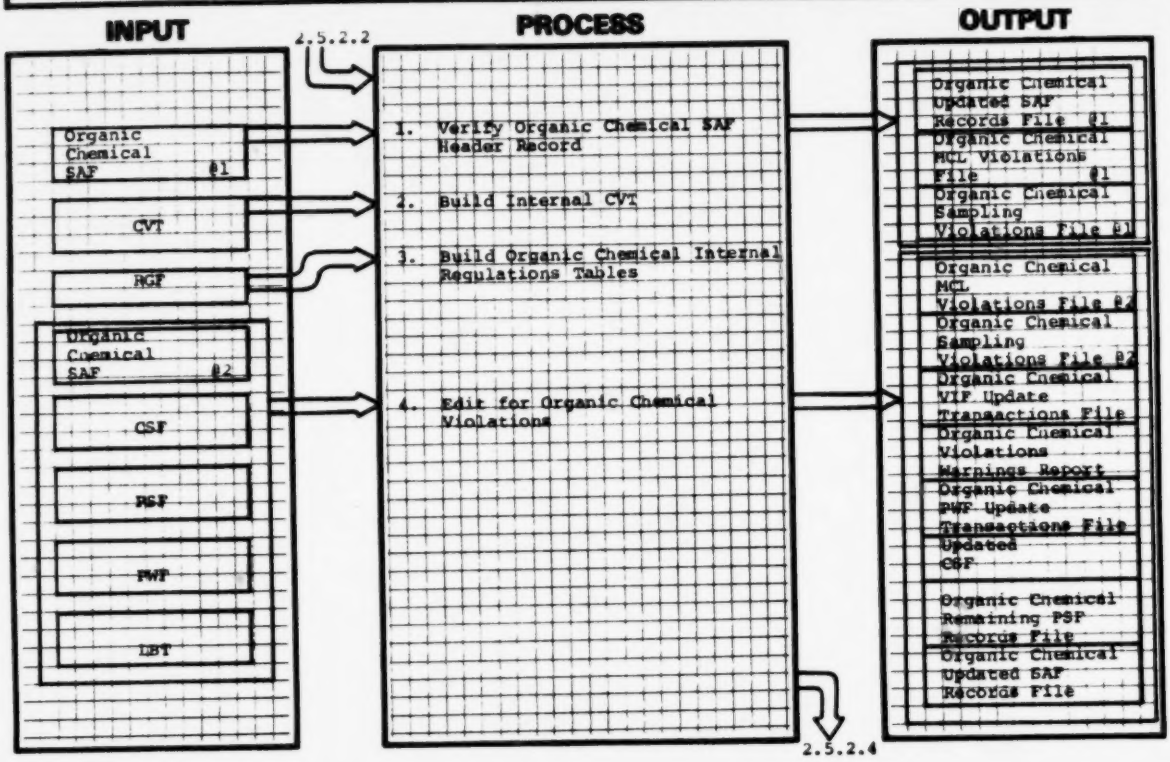
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1

Diagram No.: 2.5.2.3 **Description:** Edit for Organic Chemical Violations

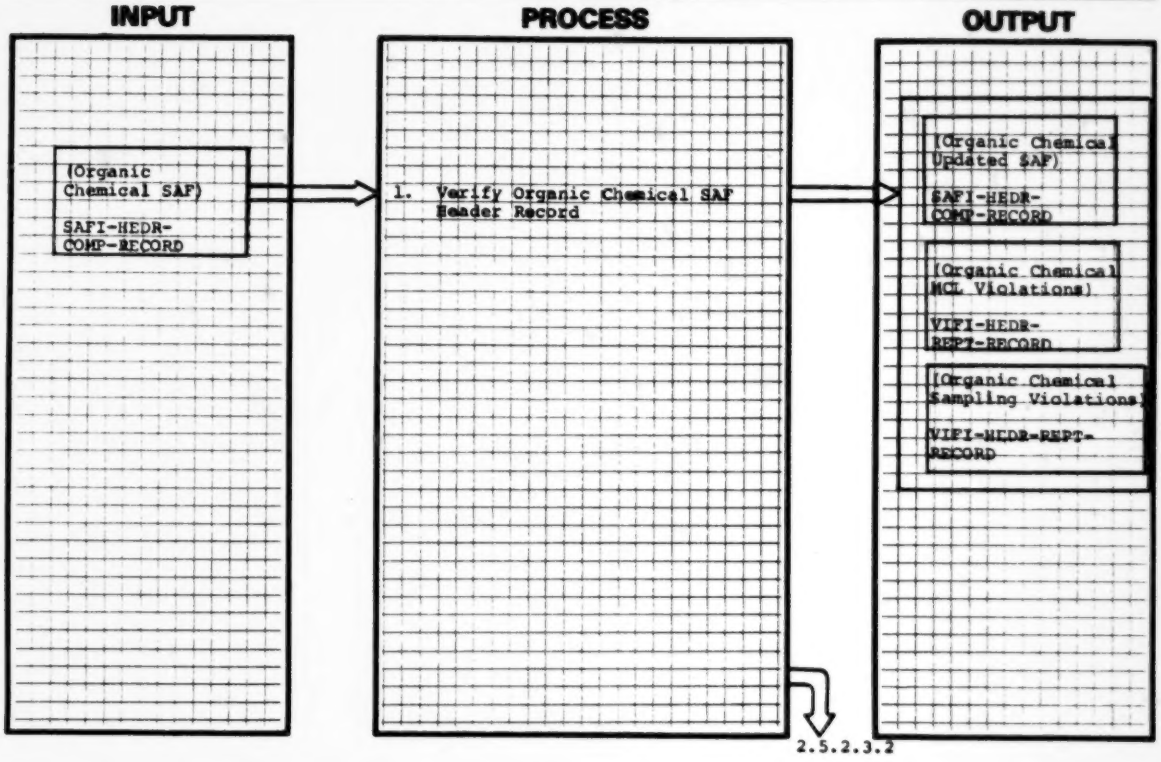


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record on the Organic Chemical Sample Analysis File (SAF) by checking the date to determine if program execution is to continue and what information is to be copied to the header records of the Organic Chemical Updated SAF Records, MCL Violations, and Sampling Violations Files.	2.5.2.3.1	WAQC033	
2	Build the Code Value Table (CVT) from the CVT.	2.5.2.3.2	WAQC033	
3	Build the Organic Chemical Internal Regulations Tables from information extracted from the Regulations File (RGF) records.	2.5.2.3.3	WAQC033	
4	Edit the Organic Chemical samples from the Organic Chemical SAF and the Periodic Sample File (PSF) against information from the Compliance Status File (CSF), the Public Water File (PWF), and the Internal Regulations Tables built in Step 3. The edits can result in creating Violation records, Violations File (VIF) and PWF Update transaction records, Warnings Report messages, an updated CSF, and Organic Chemical Remaining PSF and Organic Chemical Updated SAF sample records. The Laboratory Table (LBT) is used to provide the LAB-NAME for the MCL Violations File.	2.5.2.3.4	WAQC033	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.3.1 **Description:** Verify Organic Chemical SAF Header Record

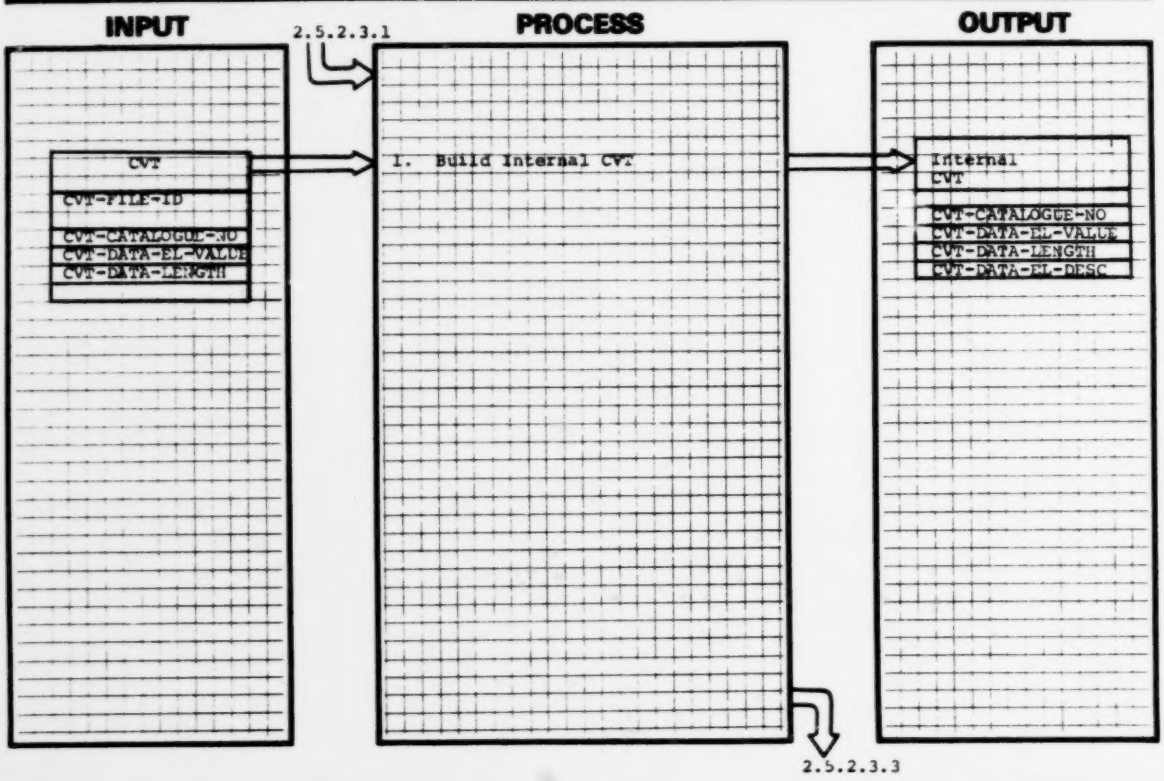


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Organic Chemical Sample Analysis File (SAF) Header Record, SAFI-HEDR-COMP-RECORD, for 'zeros' in the processing date, SAFI-HC-DATE and build the header records for the Organic Chemical Updated SAF Records File, SAFI-HEDR-COMP-RECORD, for the Organic Chemical MCL Violations File, VIFI-HEDR-REPT-RECORD, and for the Organic Chemical Sampling Violations File, VIFI-HEDR-REPT-RECORD. If the processing date is 'zeros' , the output file header records are built containing only the SAFI-HC-DATE value. This will terminate processing in those programs to which the header records are passed. If the processing date is not 'zeros', all the output file header records are built containing all the information in SAFI-HEDR-COMP-RECORD. This will permit normal processing in those programs to which the header records are passed. NOTE: The Organic Chemical Updated SAF Records File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC038 (HIPO 2.5.3.1). The Organic Chemical MCL Violations File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC040 (HIPO 2.5.4.1.2). The Organic Chemical Sampling Violations File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC060 (HIPO 2.5.4.2.2).		WAQC033	221 213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

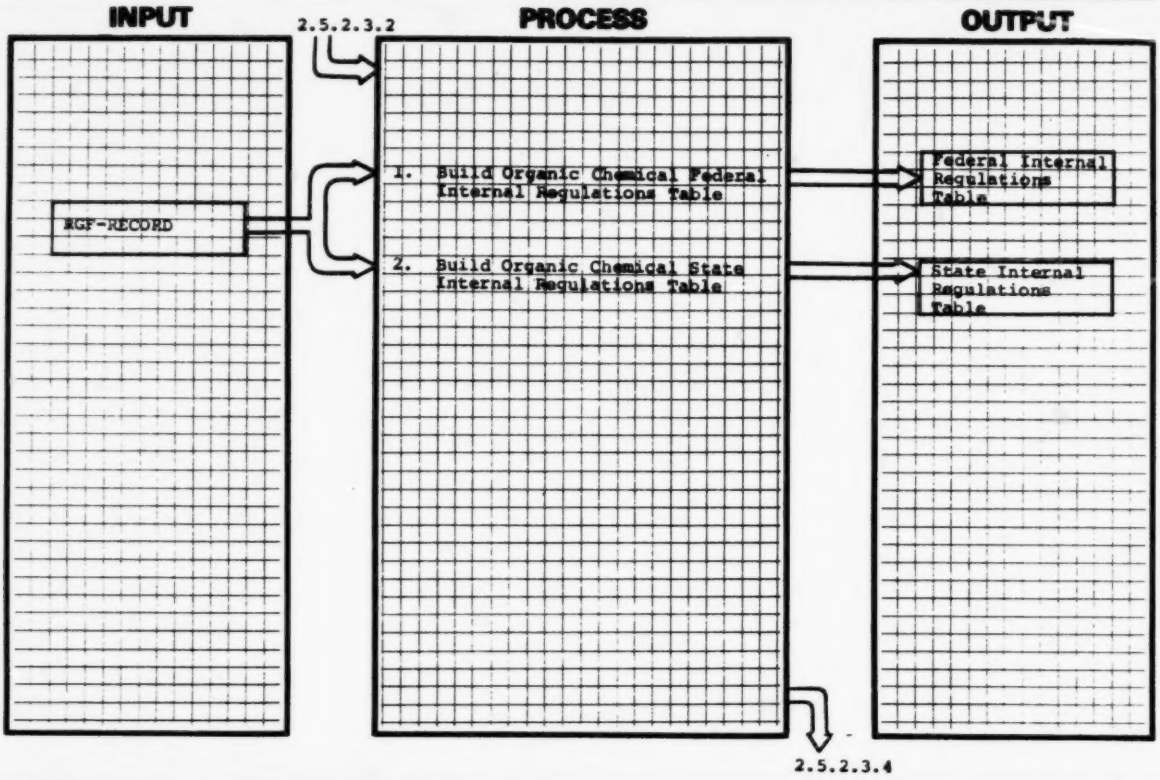
Diagram No.: 2.5.2.3.2 **Description:** Build Internal CVT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of data element edit values for Contaminant ID. The records are stored in an internal CVT to be used later to provide the Contaminant Name. These edit values are contained in the common CVT having a file ID of 'MS'.		WAQC033	MSIS. 206 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1
Diagram No.: 2.5.2.3.3 **Description:** Build Organic Chemical Internal Regulations Tables

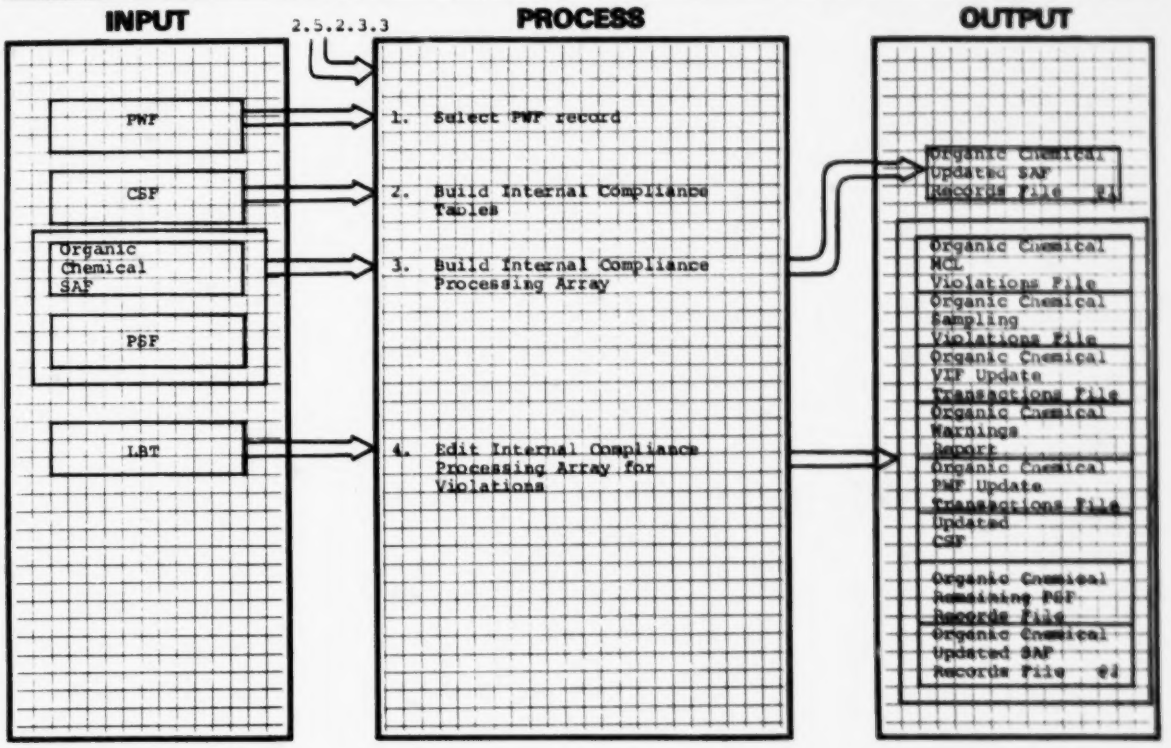


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Organic Chemical Federal Internal Regulations Table by selecting the following information from the Federal records on the Regulations File (RGF) with a Contaminant Group code of '2' (the first position of Contaminant ID) and storing them internally: . Contaminant ID . MCL and MCL decimal . Reasonable MCL bounds (lower/higher) . Number of Check Samples Required if Regular Sample violates the MCL . Seasonal Sampling only flag . Period within which check samples must be made . All data specific to both a community/noncommunity PWS.		WAQC033	REGS. 250
2	Build the Organic Chemical State Internal Regulations Table by selecting the information shown in Step 1 above from the State records on the RGF with a Contaminant Group code of '2'. Note: The Federal RGF records have the value of 'FP' in the REGU-LEVEL field; while the State RGF records have the value of 'SP' in the REGU-LEVEL field.		WAQC033	REGS. 250

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1

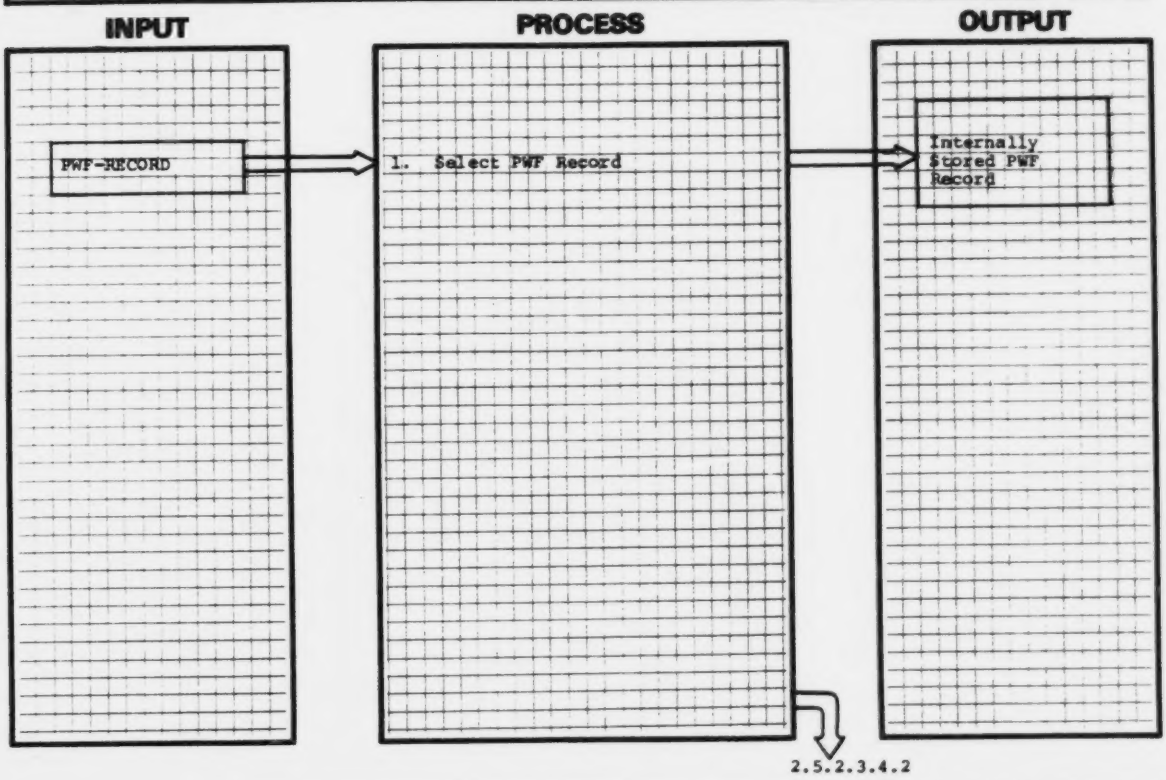
Diagram No.: 2.5.2.3.4 **Description:** Edit for Organic Chemical Violations



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) record and store internally.	2.5.2.3.4.1	WAQC033	
2	Build the Internal Compliance Tables of edit values from the internally stored PWF record from Step 1, the Compliance Status File (CSF) and the Internal Regulations Tables.	2.5.2.3.4.2	WAQC033	
3	Build the Internal Compliance Processing Array from sample records on the Organic Chemical Sample Analysis File (SAF) and the Periodic Sample File (PSF). Organic Chemical sample records not to be used in processing violations are copied directly to the Organic Chemical SAF.	2.5.2.3.4.3	WAQC033	
4	Edit the Internal Compliance Processing Array for violations against the Internal Compliance Tables built in Step 2. Violations result in the creation of Maximum Contaminant Level (MCL) or Sampling Violation records and the creation of Violations File (VIF) Update transactions. Certain situations will result in the production of Warnings Report messages instead of violation records or transactions. The cancellation of an MCL violation (when followup monitoring is no longer required) results in the creation of PWF Update transactions. Changes in the violation status of the Public Water System (PWS) result in updating of the CSF. Those PSF sample records not processed for violations are copied to the Remaining PSF, while all others, and the old SAF records, are copied to the Updated SAF. The Laboratory Table (LBT) is used to provide the Lab Name for the Violation records. Note: See Appendix A.3 for Compliance Overview	2.5.2.3.4.4	WAQC033	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1
Diagram No.: 2.5.2.3.4.1 **Description:** Select PWF Record

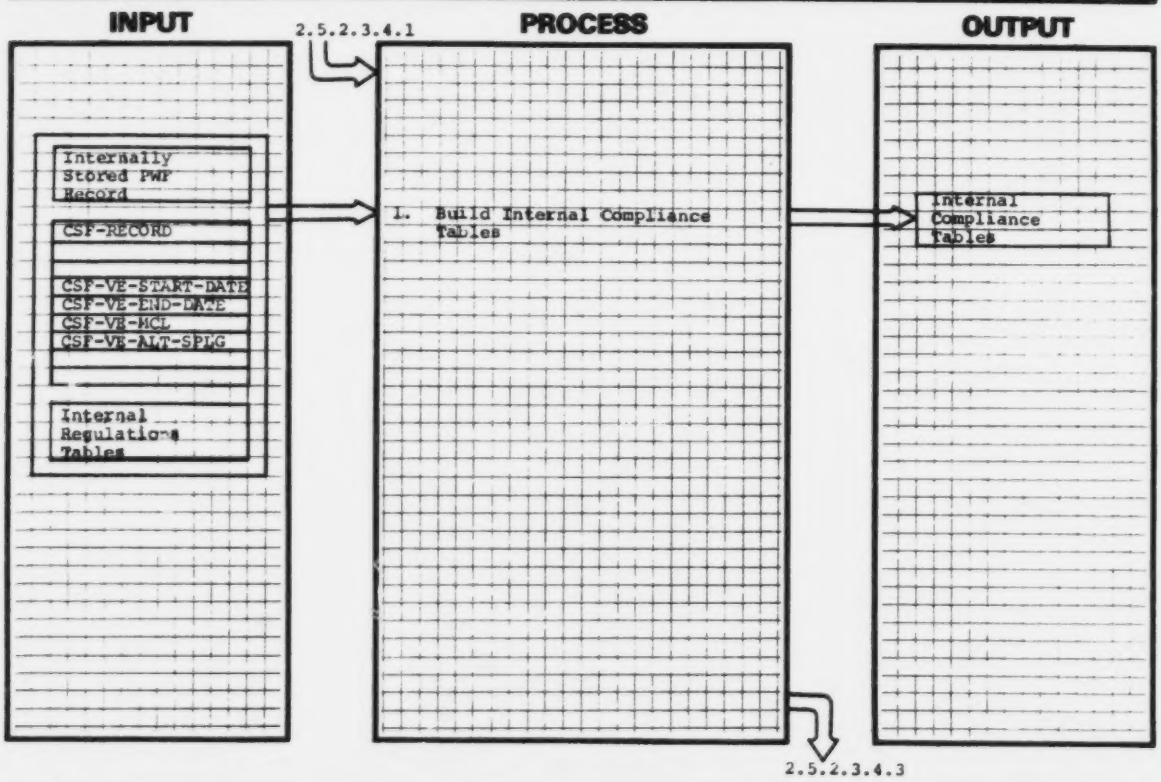


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) records needed for Organic Chemical compliance and store internally. See Appendix B.3 for details		WAQC033	PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.3.4.2 **Description:** Build Internal Compliance Tables

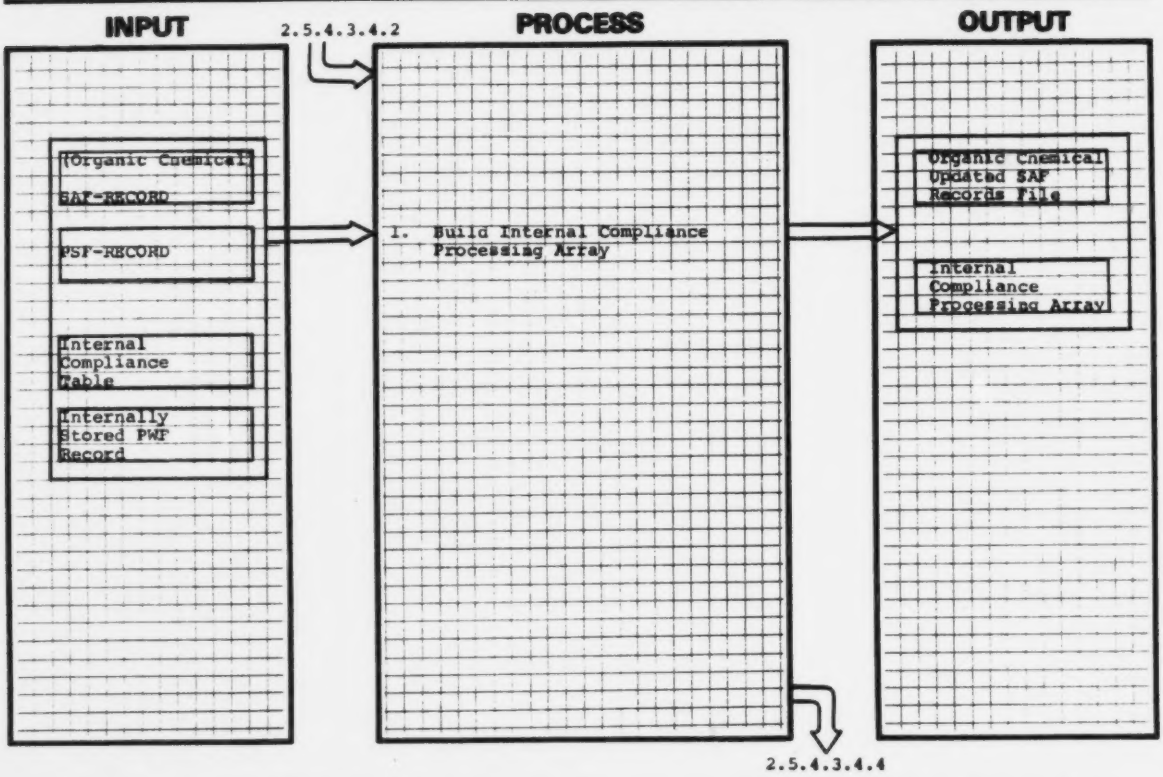


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Compliance Tables for each Contaminant-ID being processed in the following manner: a. Information pertaining to the Contaminant-ID being processed is copied from the Internal Regulations Tables into the Internal Compliance Tables. b. Information is added to the Internal Compliance Tables from the Internally Stored Public Water File (PWF) record as it pertains to the contaminant. c. The Internal Compliance Tables are modified by any Variance or Exemption information in the Internally stored PWF record and the Compliance Status File (CSF) record for the Contaminant-ID being processed. See Appendix C.3 for details		WAQC033	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/7/77 Page: 1 of 1

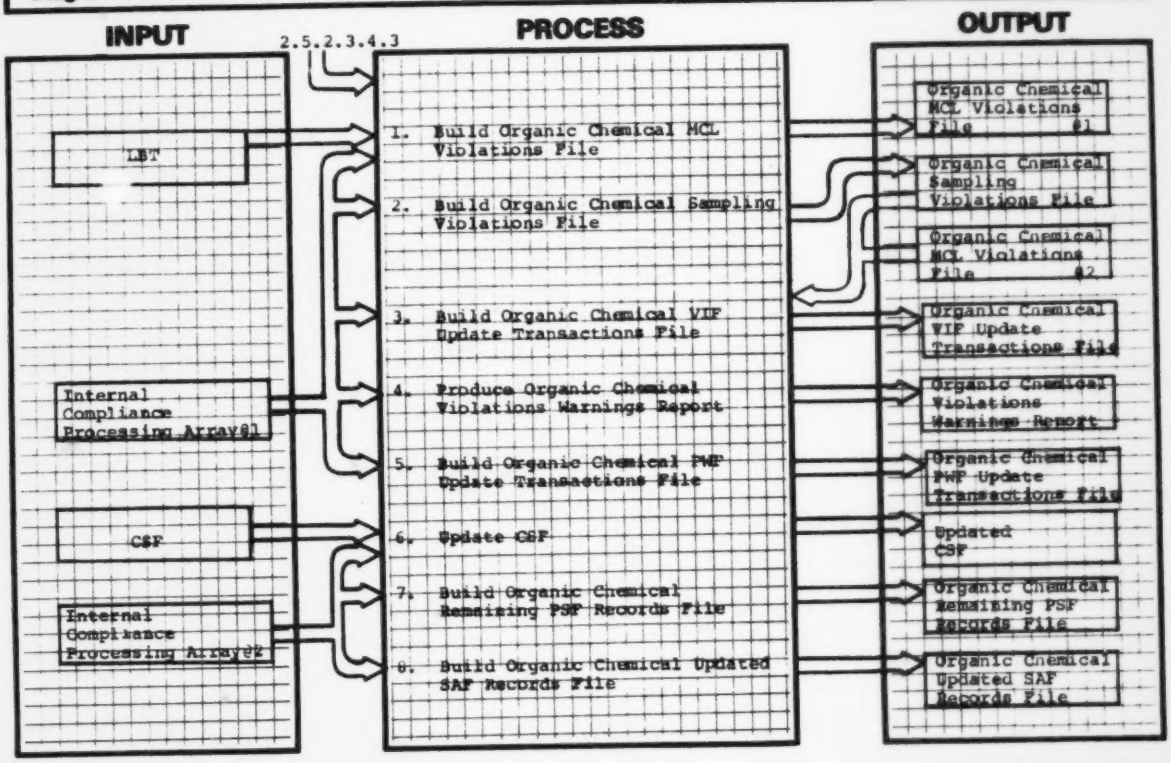
Diagram No.: 2.5.2.3.4.3 Description: Build Internal Compliance Processing Array



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Compliance Processing Array from those sample records selected from the Organic Chemical Sample Analysis File (SAF) and Periodic Sample File (PSF) for use in processing Maximum Contaminant Level (MCL) and Sampling Violations. Those PSF Organic Chemical records or Organic Chemical SAF records not used in processing violations, as determined by information in the Internal Compliance Tables and the Internally Stored Public Water File (PWF) record, are copied to the Organic Chemical Updated SAF Records File without violation processing. See Appendix D.3 for details		WAQC033	254 252

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1
Diagram No.: 2.5.2.3.4.4 **Description:** Edit Internal Compliance Processing Array for Violations

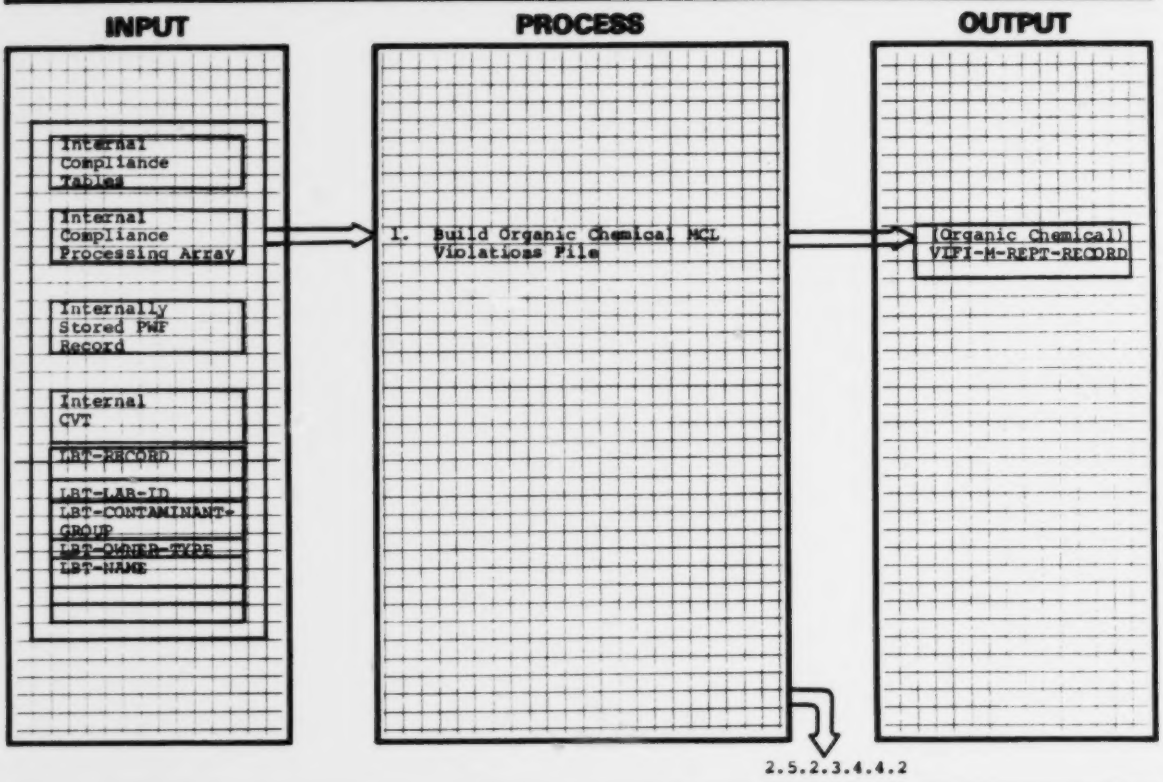

INPUT
2.5.2.3.4.3
PROCESS
OUTPUT
LBT
Internal Compliance Processing Array#1
CSF
Internal Compliance Processing Array#2
1. Build Organic Chemical MCL Violations File
2. Build Organic Chemical Sampling Violations File
3. Build Organic Chemical VIF Update Transactions File
4. Produce Organic Chemical Violations Warnings Report
5. Build Organic Chemical PWF Update Transactions File
6. Update CSF
7. Build Organic Chemical Remaining PSF Records File
8. Build Organic Chemical Updated SAF Records File
Organic Chemical MCL Violations File #1
Organic Chemical Sampling Violations File
Organic Chemical MCL Violations File #2
Organic Chemical VIF Update Transactions File
Organic Chemical Violations Warnings Report
Organic Chemical PWF Update Transactions File
Updated CSF
Organic Chemical Remaining PSF Records File
Organic Chemical Updated SAF Records File

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The Internal Compliance Processing Array is edited against the Internal Compliance Tables for Maximum Contaminant Level (MCL) and Sampling Violations. The edits result in the creation of several records depending on the particular circumstances.			
1	Internal Compliance Processing Array (CPA) records in violation of MCL requirements cause Organic Chemical MCL Violations File records to be built.	2.5.2.3.4.4.1	WAQC033	
2	Internal CPA missing records cause Organic Chemical Sampling Violations File records to be built.	2.5.2.3.4.4.2	WAQC033	
3	Either MCL or Sampling violations also cause Organic Chemical Violations File Update transaction records to be built.	2.5.2.3.4.4.3	WAQC033	
4	Certain situations will produce messages in the Organic Chemical Warnings Report instead of the violation records in Steps 1, 2, and 3.	2.5.2.3.4.4.4	WAQC033	
5	The cancellation of MCL violations results in the creation of Organic Chemical PWF Update Transactions File records.	2.5.2.3.4.4.5	WAQC033	
6	Changes in violation status of the Public Water System (PWS) cause the Compliance Status File (CSF) record to be updated.	2.5.2.3.4.4.6	WAQC033	
7	Those Periodic Sample File (PSF) Organic Chemical records not used for processing violations are copied to the Organic Chemical Remaining PSF Records File.	2.5.2.3.4.4.7	WAQC033	
8	Those PSF records used for compliance and the Sample Analysis File (SAF) records stored in the Internal Compliance Processing Array are copied to the Organic Chemical Updated SAF Records File.	2.5.2.3.4.4.8	WAQC033	
	Note: See Appendix E.3 for details of violation processing.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 2

Diagram No.: 2.5.2.3.4.4.1 **Description:** Build Organic Chemical MCL Violations File

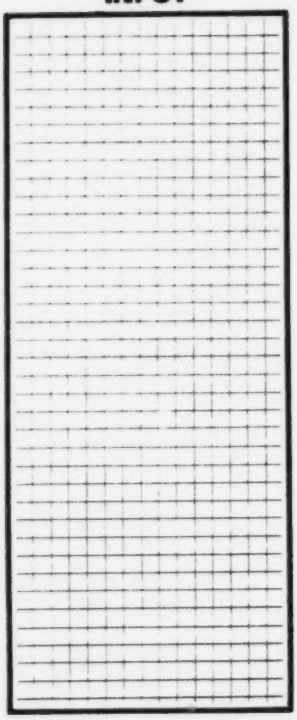


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Organic Chemical Maximum Contaminant Level (MCL) Violations File records, VIFI-M-REPT-RECORD, from the Organic Chemical Internal Processing Array sample records flagged as being in violation of MCL requirements. The VIFI-M-REPT-RECORD's are passed to program WAQC040 (HIPO 2.5.4.1.2) to be used to produce the Chemical MCL Violations Report. The VIFI-M-VIOLATION-TYPE field is set to '01'. The remainder of the fields in the VIFI-M-REPORT-RECORD, as listed below, are filled from the sources indicated: From the Internally Stored Public Water File (PWF) Record: VIFI-M-PWS-NAME VIFI-M-POPULATION VIFI-M-REGION VIFI-M-PWS-TYPE VIFI-M-SOURCE-CODE VIFI-M-DISTRICT From the Internal Code Value Table (CVT): VIFI-M-CONTAMINANT-NAME From the Internal Compliance Tables: VIFI-M-MCL-VIOLATED VIFI-M-MCL-VIOL-DECIMALS Internally Generated: VIFI-M-REGULATION-LEVEL VIFI-M-VIOLATION-DATE VIFI-M-VIOLATION-DURATION		WAQC033	216 250 256

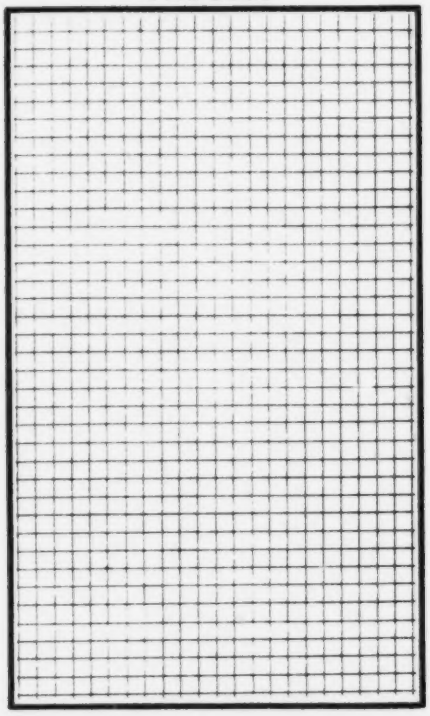
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/7/77 Page: 2 of 2
Diagram No.: 2.5.2.3.4.4.1 Description: Build Organic Chemical MCL Violations File

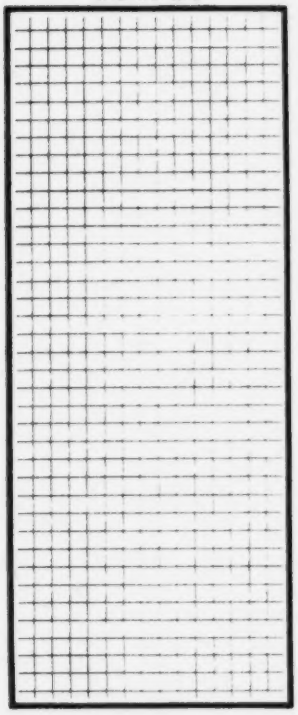
INPUT



PROCESS



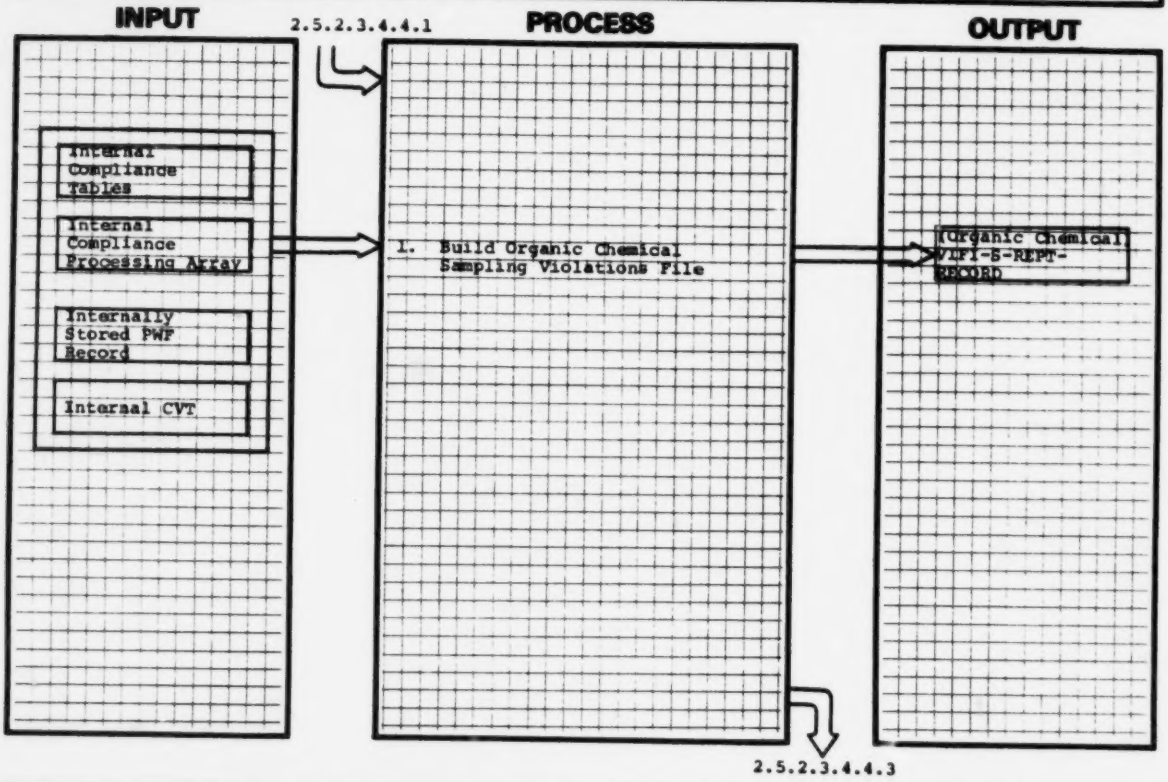
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	From the Internal Compliance Array: VIFI-M-PWS-ID VIFI-M-CONTAMINANT-ID VIFI-M-LAB-ID VIFI-M-SAMPLE-DATE VIFI-M-ANALYSIS-METHOD VIFI-M-ANALYSIS-RESULT VIFI-M-ANALYSIS-DECIMALS VIFI-M-ANALYSIS-DATE VIFI-M-SAMPLE-TYPE From the Laboratory Table (LBT): VIFI-M-LAB-NAME Notes: (1) All other VIFI-M-REPT-RECORD fields not mentioned here, if alphabetic, are set to blanks; if numeric, are set to zero. (2) When copying the value for VIFI-M-SOURCE-CODE from the internal Public Water File (PWF) record, check all available PWF-PLANT-SOURCE-CODE fields. If any are 'S' or 'P', then set the value of VIFI-M-SOURCE-CODE to 'S' (surface); otherwise set the value to 'G' (ground).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/7/77 Page: 1 of 2
Diagram No.: 2.5.2.3.4.4.2 Description: Build Organic Chemical Sampling Violations File

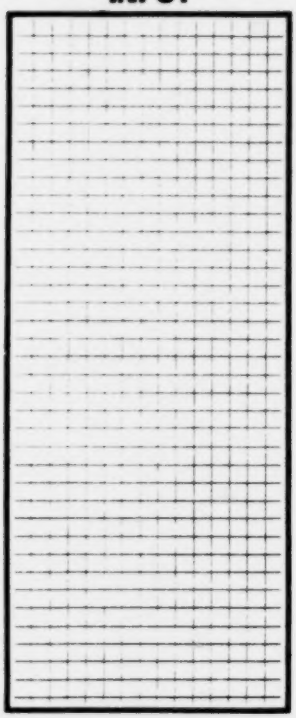


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Organic Chemical Sampling Violations File records, VIFI-S-REPT-RECORD, from information in the Organic Chemical Internal Compliance Processing Array (CPA) indicating Regular Sampling or Check Sampling Violations. The VIFI-S-REPT-RECORD's are passed to program WAQC060 (HIPO 2.5.4.2.2) to be used to produce the Chemicals Sampling Violations Report. The VIFI-S-VIOLATION-TYPE field is set to '03' if the violation is of Regular Sampling requirements, or to '04' if the violation is of Check Sampling requirements. The remainder of the fields in the VIFI-R-REPT-RECORD, as listed below, are filled from the sources indicated: From the Internally Stored Public Water File (PWF) Record: VIFI-S-PWS-NAME VIFI-S-POPULATION VIFI-S-REGION VIFI-S-PWS-TYPE VIFI-S-SOURCE-CODE VIFI-S-DISTRICT From the Internal Code Value Table (CVT): VIFI-S-CONTAMINANT-NAME From the Internal Compliance Tables: VIFI-S-SAMPLES-NUM-REQUIRED VIFI-S-SAMPLING-FREQ-VIOL Internally Generated: VIFI-S-REGULATION-LEVEL VIFI-S-VIOLATION-DURATION VIFI-S-VIOLATION-DATE VIFI-S-SAMPLES-NUM-TAKEN VIFI-S-SAMPLING-CUTOFF-DATE		WAQC033	231

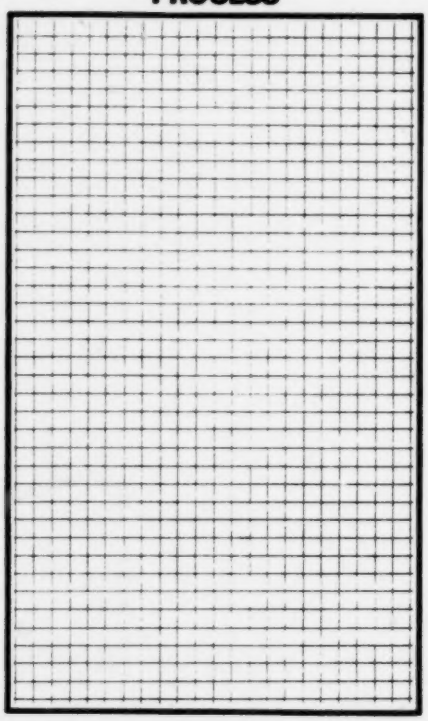
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 2 **of** 2
Diagram No.: 2.5.2.3.4.4.2 **Description:** Build Organic Chemical Sampling Violations File

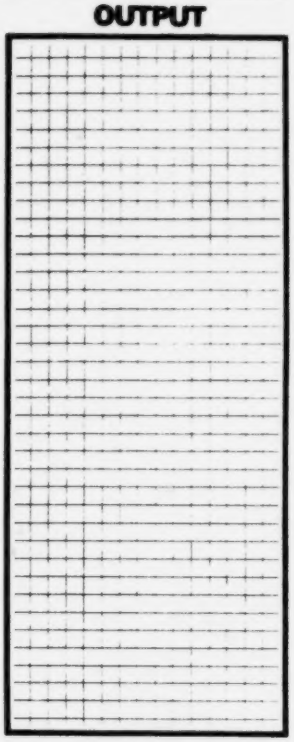
INPUT



PROCESS



OUTPUT

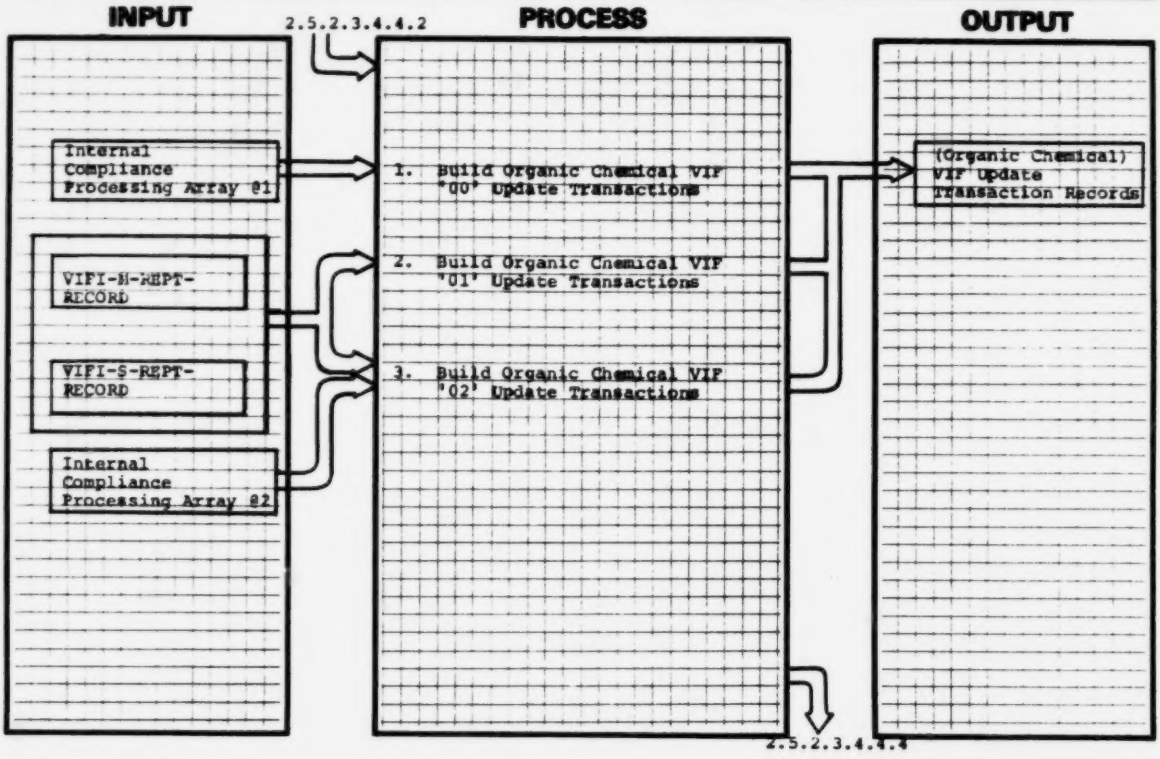


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	From the Internal Compliance Array: VIFI-S-PWS-ID VIFI-S-SAMPLE-DATE VIFI-S-CONTAMINANT-ID VIFI-S-SAMPLE-TYPE Notes: (1) All otner VIFI-S-REPT-RECORD fields not mentioned here, if alphabetic, are set to blank; if numeric, are set to zero. (2) When copying the value for VIFI-S-SOURCE-CODE from the internal PWF record, check all available PWF-PLANT-SOURCE-CODE fields. If any are 'S' or 'P', then set the value of VIFI-S-SOURCE-CODE to 'S' (surface); otherwise set the value to 'G' (ground).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 3/7/77 Page: 1 of 1

Diagram No.: 2.5.2.3.4.4.3 Description: Build Organic Chemical VIF Update Transactions File

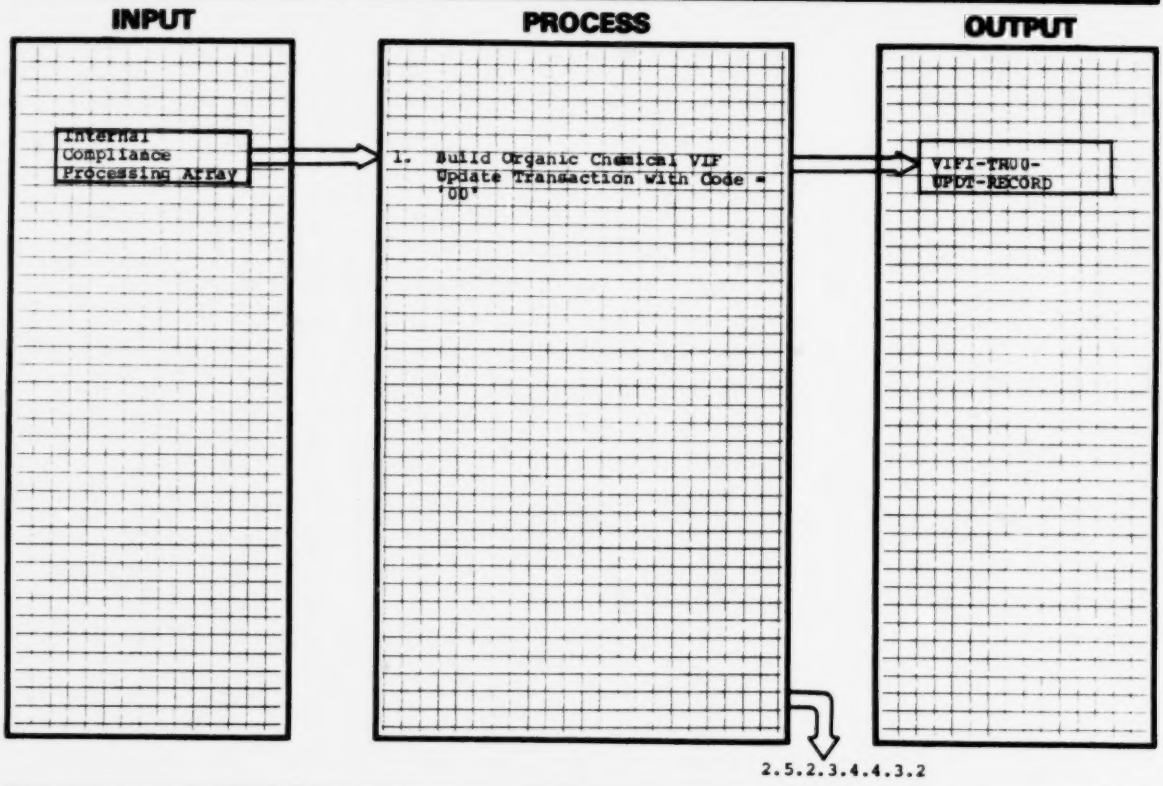


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Organic Chemical Violations File (VIF) Update transaction record with code = '00' in positions 6-7.	2.5.2.3.4.4.3.1	WAQC033	
2	Build the Organic Chemical VIF Update transaction record with code = '01' in positions 6-7.	2.5.2.3.4.4.3.2	WAQC033	
3	Build the Organic Chemical VIF Update transaction record with code = '02' in positions 6-7.	2.5.2.3.4.4.3.2	WAQC033	
	Note: These transaction records are built only if violations were determined in HIPO 2.5.2.3.4.4.1 or 2.5.2.3.4.4.2. All three transactions are built for each Federal Maximum Contaminant Level (MCL) violation, each State MCL violation, each Federal Sampling Violation, and each State Sampling Violation.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.3.4.4.3.1 **Description:** Build Organic Chemical VIF '00' Update Transaction

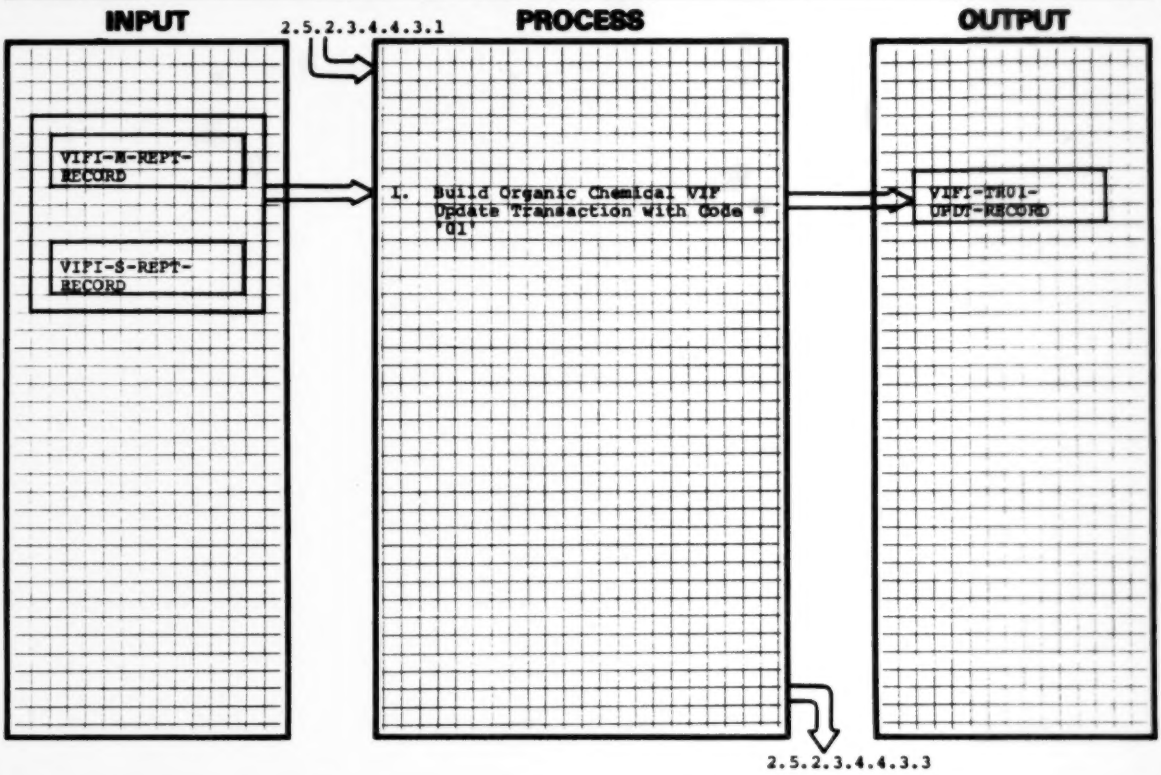


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the Internal Compliance Processing Array has Maximum Contaminant Level (MCL) or Sampling Violations, as determined in HIPO's 2.5.2.3.4.4.1 and 2.5.2.3.4.4.2, the Violations File (VIF) Update Transaction record to create a new VIF record is built as follows: VIFI-TR00-VIOLATION-ID is set to blank. VIFI-TR00-TRANSACTION-CODE is set to '00'. VIFI-TR00-CREATE-DELETE-FLAG is set to 'Y'.		WAQC033	223

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1

Diagram No.: 2.5.2.3.4.4.3.2 **Description:** Build Organic Chemical VIF '01' Update Transaction

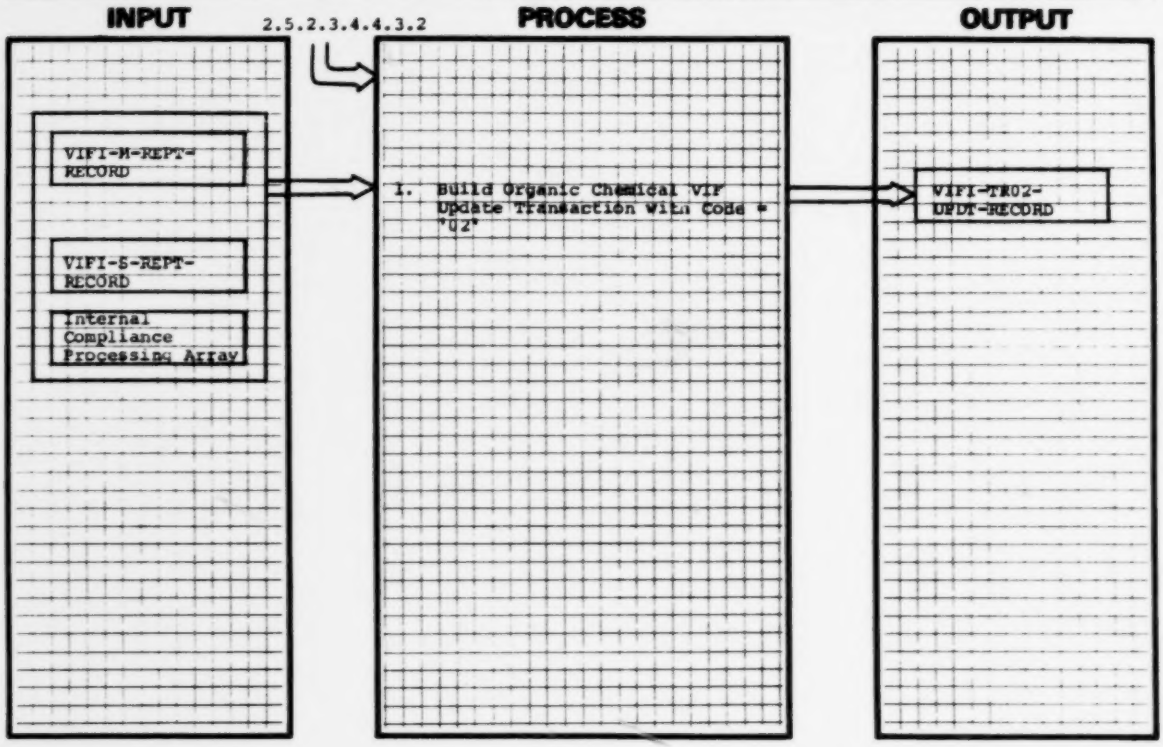


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the transaction code = '00' record was built in HIPO 2.5.2.3.4.4.3.1, then use the Violations File (VIF) Update Transaction Code = '01' record to build the new VIF record as follows: The VIFI-TR01-VIOLATION-ID is set to blanks. The VIFI-TR01-TRANSACTION-CODE is set to '01'. For Maximum Contaminant Level (MCL) violations, the remaining fields of the VIFI-TR01-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-M-REPT-RECORD built in HIPO 2.5.2.3.4.4.1. For Sampling violations, the remaining fields of the VIFI-TR01-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-S-REPT-RECORD built in HIPO 2.5.2.3.4.4.2.		WAQC033	224 216 231

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1

Diagram No.: 2.5.2.3.4.4.3.3 **Description:** Build Organic Chemical VIF '02' Update Transaction

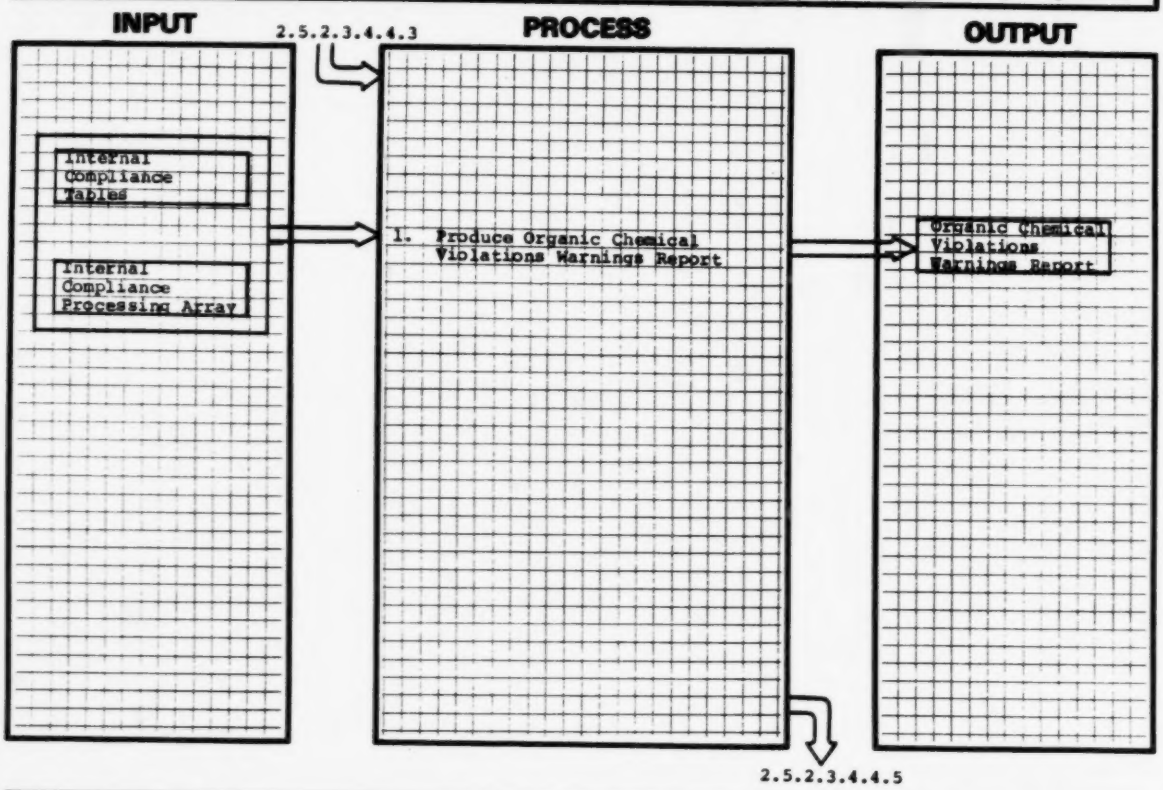


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the transaction code = '00' record was built in HIPO 2.5.2.3.4.4.3.1, then use the Violations File (VIF) Update transaction code = '02' record to build the new VIF record as follows: The VIFI-TR02-VIOLATION-ID is set to blanks. The VIFI-TR02-TRANSACTION-CODE is set to '02'. For Maximum Contaminant Level (MCL) violations, the remaining fields of the VIFI-TR02-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-M-REPT-RECORD built in HIPO 2.5.2.3.4.4.1. For Sampling violations, the remaining fields of the VIFI-TR02-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-S-REPT-RECORD built in HIPO 2.5.2.3.4.4.2. The VIFI-TR02-SAMPLE-KEY field is filled from the PSF-SAMPLE-KEY in the Internal Compliance Processing Array record.		WAQC033	216 225 231

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

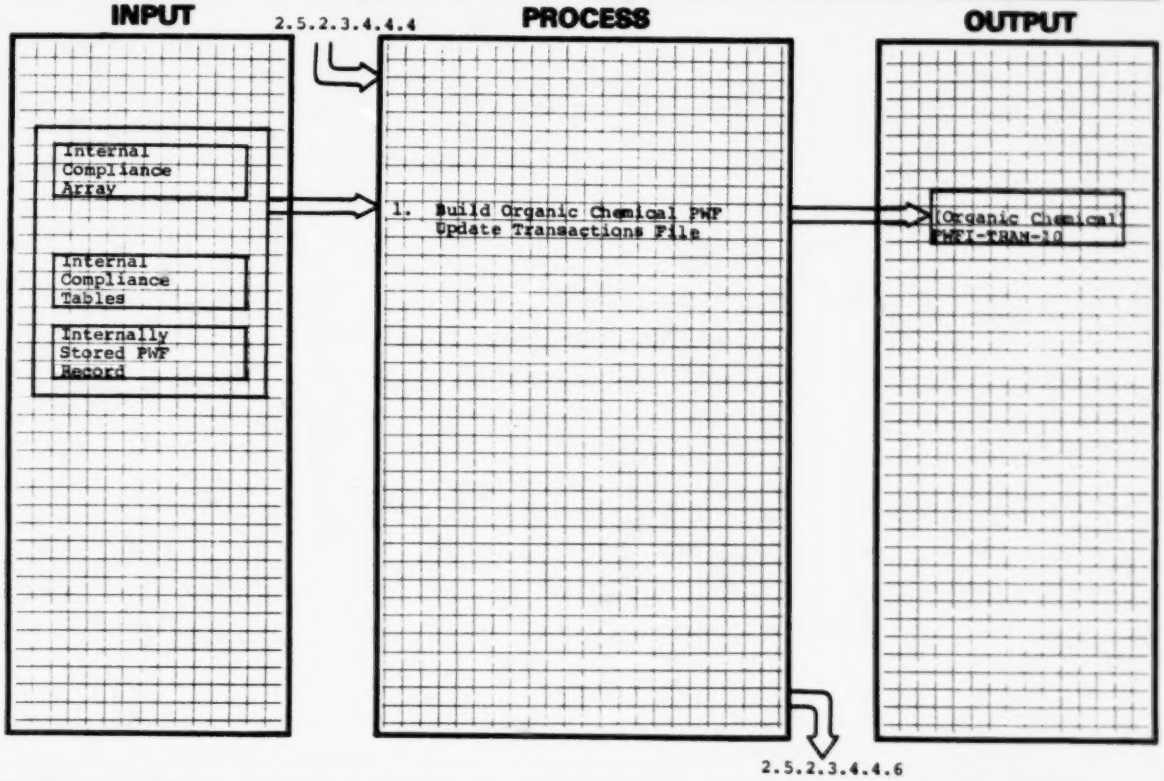
Diagram No.: 2.5.2.3.4.4.4 **Description:** Produce Organic Chemical Violations Warnings Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Due to enactment or cancellation of a sampling Variance or Exemption, as shown in the Internal Compliance Tables, the Public Water System (PWS) is considered to be 'in transition' either into, in the case of enactment, or out of, in the case of cancellation, a Variances and Exemptions Sampling period. In either case, the contaminants of the PWS are checked for sampling violations as in HIPO 2.5.2.3.4.4.2 but instead of sampling violations, messages are produced on the Organic Chemical Warnings Report. If Regular Sampling violations are detected, the message is 'No Rglr Spls taken within the period XX/XX/XX to XX/XX/XX'. If Check Sampling violations are detected, the message is 'No Check Spls taken within the period XX/XX/XX to XX/XX/XX'.		WAQC033	326

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1
Diagram No.: 2.5.2.3.4.4.5 **Description:** Build Organic Chemical PWF Update Transactions File

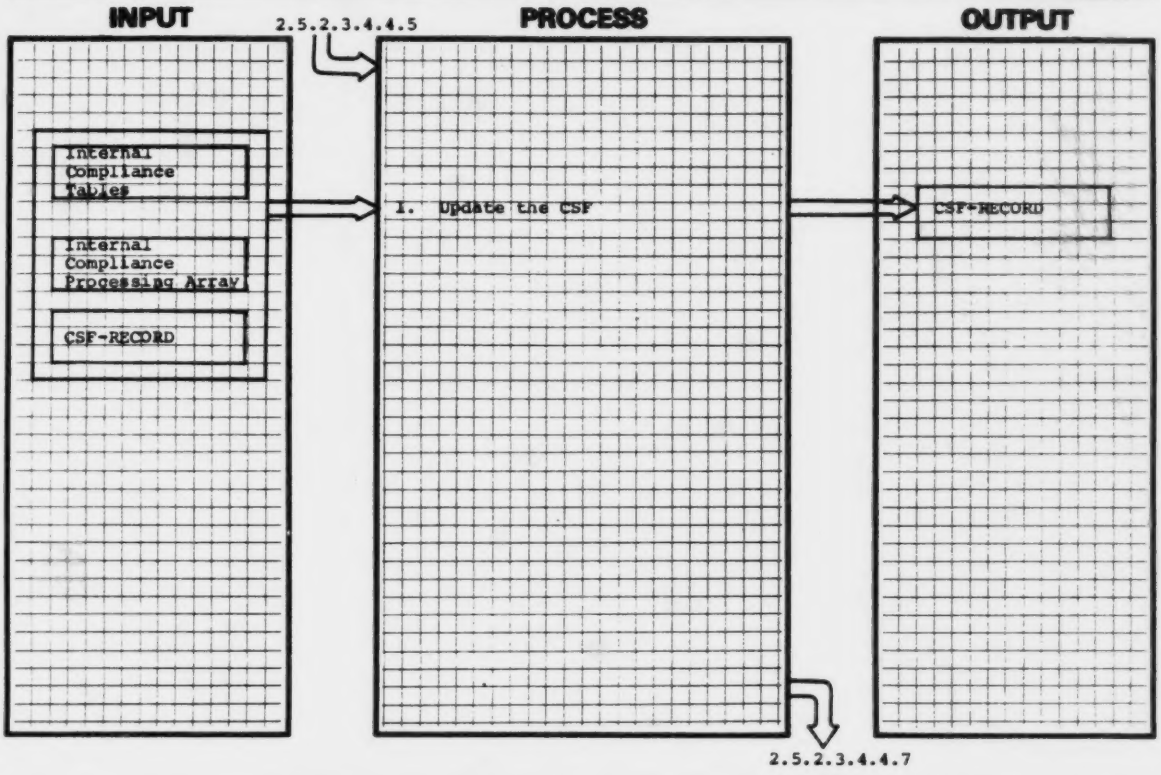


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If a Maximum Contaminant Level (MCL) violation is cancelled, a transaction record is produced to reinitialize the Followup-Monitoring fields in the Public Water File (PWF) for that contaminant and Public Water System (PWS). The PWFI-ID10 field is set to the ID code of the PWS. The PWFI-TRAN-CODE10 field is set to '10'. The PWFI-OCCURRENCE10 field is set to the positions (1-4) of the Followup-Monitoring fields in the array in the Internally Stored PWF record which match the fields to be changed in the Internal Compliance Tables. The PWFI-STATE-CONTAMINANT-ID-CHEM and PWFI-STATE-SAMPLING-FREQUENCY fields are set to a '$' followed by blanks.		WAQC033	PWSI. 223 PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

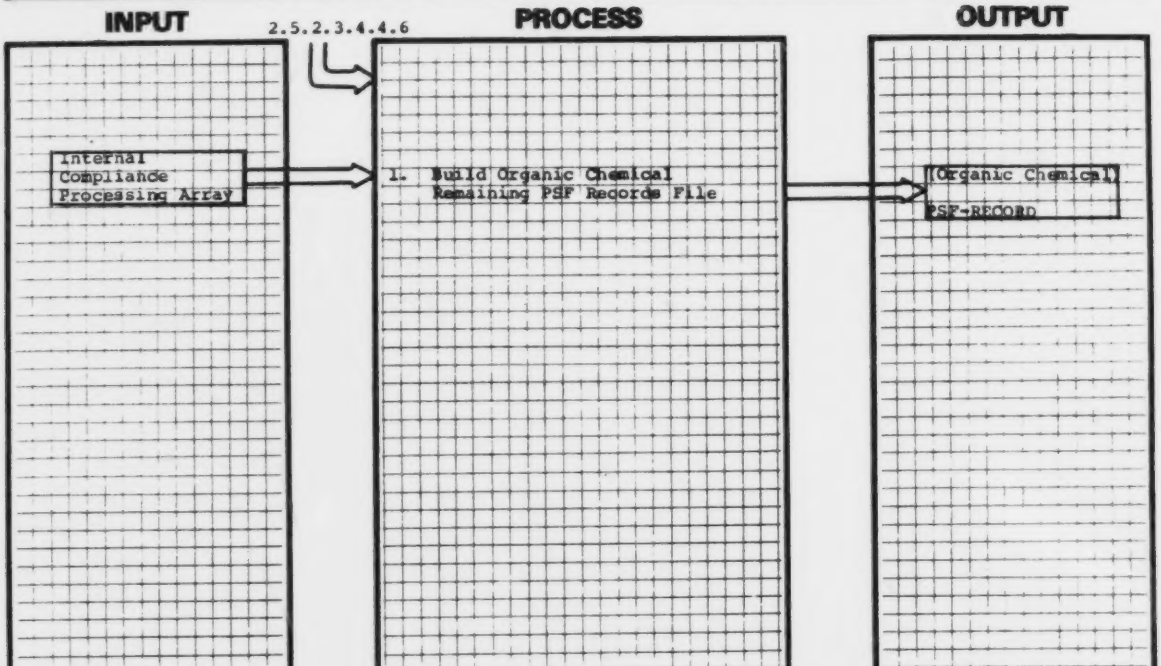
Diagram No.: 2.5.2.3.4.4.6 **Description:** Update CSF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Compliance Status File (CSF) is updated for each contaminant whenever the following changes occur: a. Federal Regular Sampling Period changes b. State Regular Sampling Period changes c. Federal Check Sampling Period changes d. State Check Sampling Period changes e. Maximum Contaminant Level (MCL) or Sampling Variances or Exemptions enactment, change, or cancellation. See Appendix C.3 for details		WAQC033	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 of 1
Diagram No.: 2.5.2.3.4.4.7 **Description:** Build Organic Chemical Remaining PSF Records File

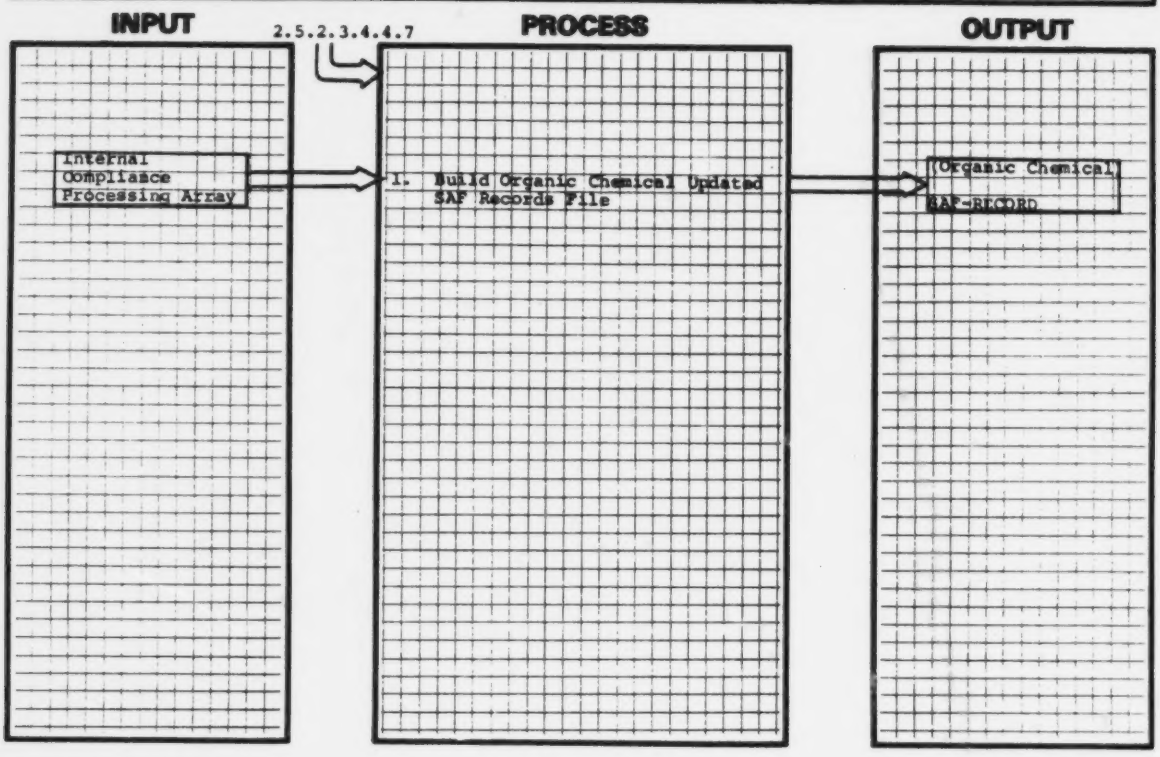


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Organic Chemical Remaining Periodic Sample File (PSF) Records, PSF-RECORD, from those Organic Chemical Internal Compliance Processing Array sample records flagged to be copied to the PSF. The PSF-RECORD is built by copying data from those fields in the Internal Compliance Processing Array sample record which correspond with the PSF-RECORD.		WAQC033	252

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.3.4.4.8 **Description:** Build Organic Chemical Updated SAF Records File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Organic Chemical Updated Sample Analysis File (SAF) Records, SAF-RECORD, from those Organic Chemical Internal Compliance Processing Array (CPA) Sample records flagged to be copied to the SAF. The SAF-RECORD is built by two methods depending on the source of the Internal Compliance Processing Array sample record: a. From the SAF: simply copy those fields in the Internal CPA sample record which correspond with the SAF-RECORD. b. From the PSF: first copy those fields in the Internal CPA sample record which correspond with the PSF-RECORD to the same fields in the SAF-RECORD; then, generate the remainder of the SAF-RECORD fields internally, based on values and flags in the Internal Compliance Processing Array sample record.		WAQC033	252 254

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC034
DATE: March 7, 1977

I. OBJECTIVES:

The objective of this program is to edit the Bacteriological sample records from the Periodic Sample File (PSF) for Maximum Contaminant Level (MCL) and Sampling violations. The MCL violations are used to build the Bacteriological MCL Violations File which is passed to module WAQC050. The Sampling violations are used to build the Bacteriological Sampling Violations File which is passed to module WAQC070. Both MCL and Sampling violations are used to build the Bacteriological Violations File (VIF) Update Transaction File which is passed to module WAQC120.

This program also builds the Bacteriological Remaining PSF and the Bacteriological Updated Sample Analysis File (SAF).

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Bacteriological Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
2.	Periodic Sample File	PSF-RECORD	WAQC.252
		PSF-HEADER-RECORD	WAQC.251
3.	Public Water File	PWF-RECORD	PWSI.200
4.	Regulations File	RGF-BACT-RECORD	REGS.253
		RGF-BPOP-RECORD	REGS.252
5.	Laboratory Table	LBT-HDR-RECORD	WAQC.256
		LBT-RECORD	WAQC.250
6.	Compliance Status File	CSF-RECORD	WAQC.257

B. Processing Options Records:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Bacteriological Remaining Periodic Sample File	PSF-RECORD	WAQC.252
2.	Bacteriological Updated Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
3.	Bacteriological MCL Violations File	VIFI-HEDR-REPT-RECORD	WAQC.213
		VIFI-M-REPT-RECORD	WAQC.216
4.	Bacteriological Sampling Violations File	VIFI-HEDR-REPT-RECORD	WAQC.213
		VIFI-S-REPT-RECORD	WAQC.231
5.	Bacteriological VIF Update Transactions File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225
6.	Updated Compliance Status File	CSF-RECORD	WAQC.257

B. Report Layout:

	NAME	EXHIBIT LAYOUT
1.	Bacteriological Violations Warnings Report	WAQC.326

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify the header record on the Bacteriological Sample Analysis File (SAF) by checking the date to determine if processing is to continue. A date equal to zeros indicates that processing is to terminate. In addition, header records for the output files are built and beginning and ending dates for the current compliance cycle (or period) are computed.

2. Build the Bacteriological Internal Regulation Tables from information extracted from the Regulations File (RGF). Two types of tables are built. The first contains upper and lower population boundaries used to obtain population dependent sampling frequencies. The second contains Bacteriological Regulations information contained in the National Interim Primary Drinking Water Regulations.

3. Edit the Public Water System (PWS) for Bacteriological Violations based on sample information in the Periodic Sample File (PSF) and the SAF, the Internal Regulation Tables, the Public Water File (PWF) and the Compliance Status File (CSF). If a particular PWS is in violation, records may be written to the Bacteriological MCL Violations File, the Bacteriological Sampling Violations File and the Bacteriological VIF Update Transaction File. The laboratory name is obtained from the Laboratory Table (LBT), whenever needed. In addition, messages may be produced on the Bacteriological Violations Warning Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

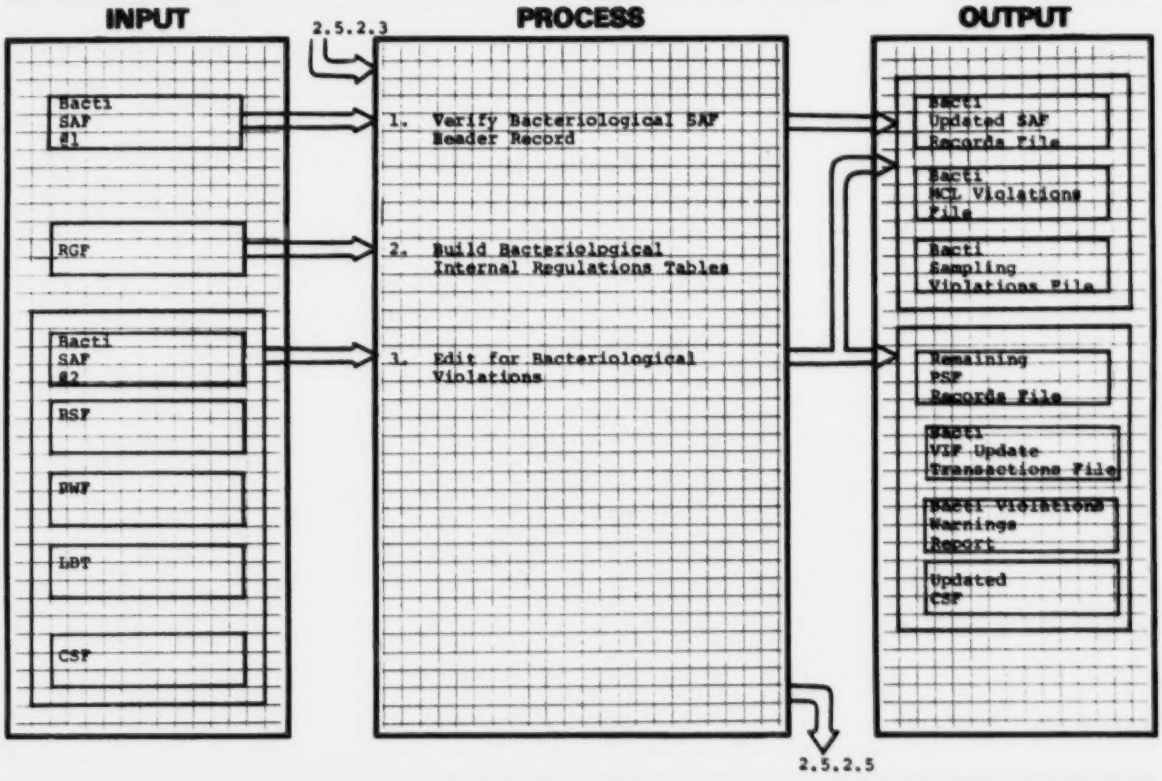
Not Applicable

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 of 1
Diagram No.: 2.5.2.4 **Description:** Edit for Bacteriological Violations

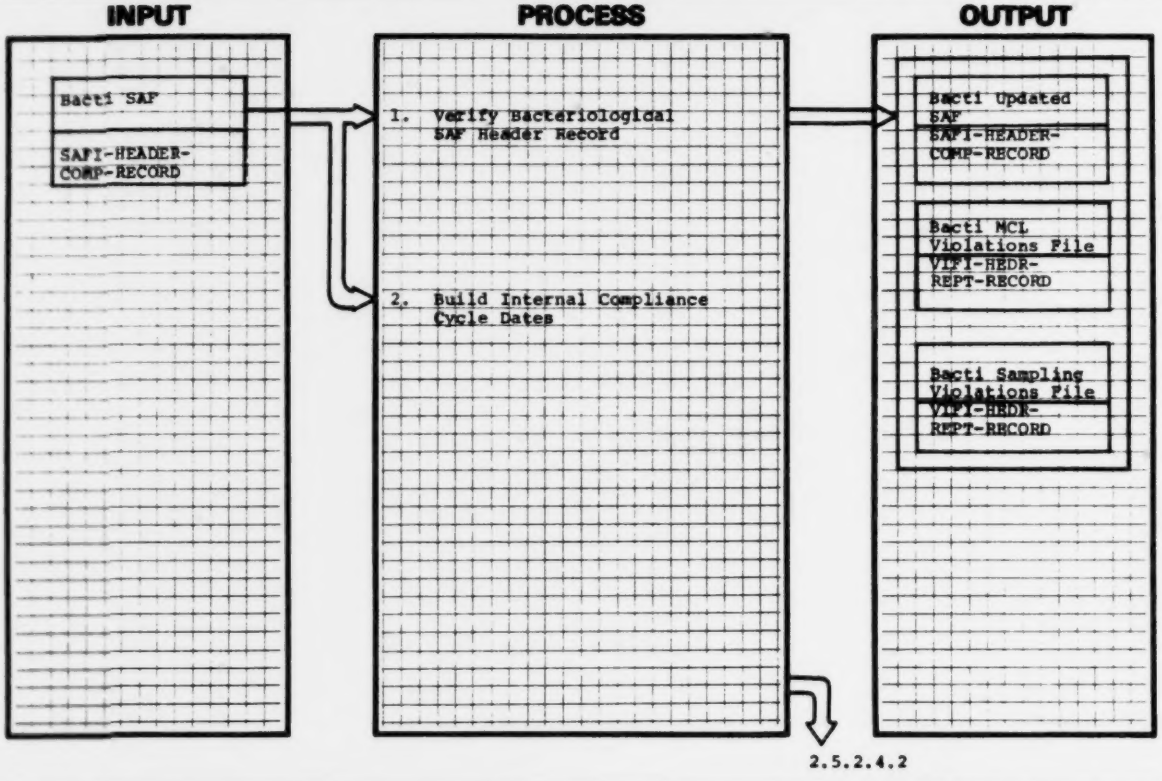


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record on the Bacteriological Sample Analysis File (SAF) by checking the date to determine if program execution is to continue. In addition header records for the output files are built and beginning and ending dates for the current compliance period are computed.	2.5.2.4.1	WAQC034	
2	Build the Bacteriological Internal Regulation Tables from information extracted from the Regulations File (RGF).	2.5.2.4.2	WAQC034	
	Edit the Public Water Systems (PWS) for Bacteriological Violations based on sample information in the Periodic Sample File (PSF) and SAF, Internal Regulation Tables, Compliance Status File (CSF), and the Public Water File (PWF) Records. The edits result in Violation records, Violation File (VIF) Update transactions and warning messages. The Laboratory Table (LBT) is used to provide lab name where needed in the output records.	2.5.2.4.3	WAQC034	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.4.1 **Description:** Verify Bacteriological SAF Header Record

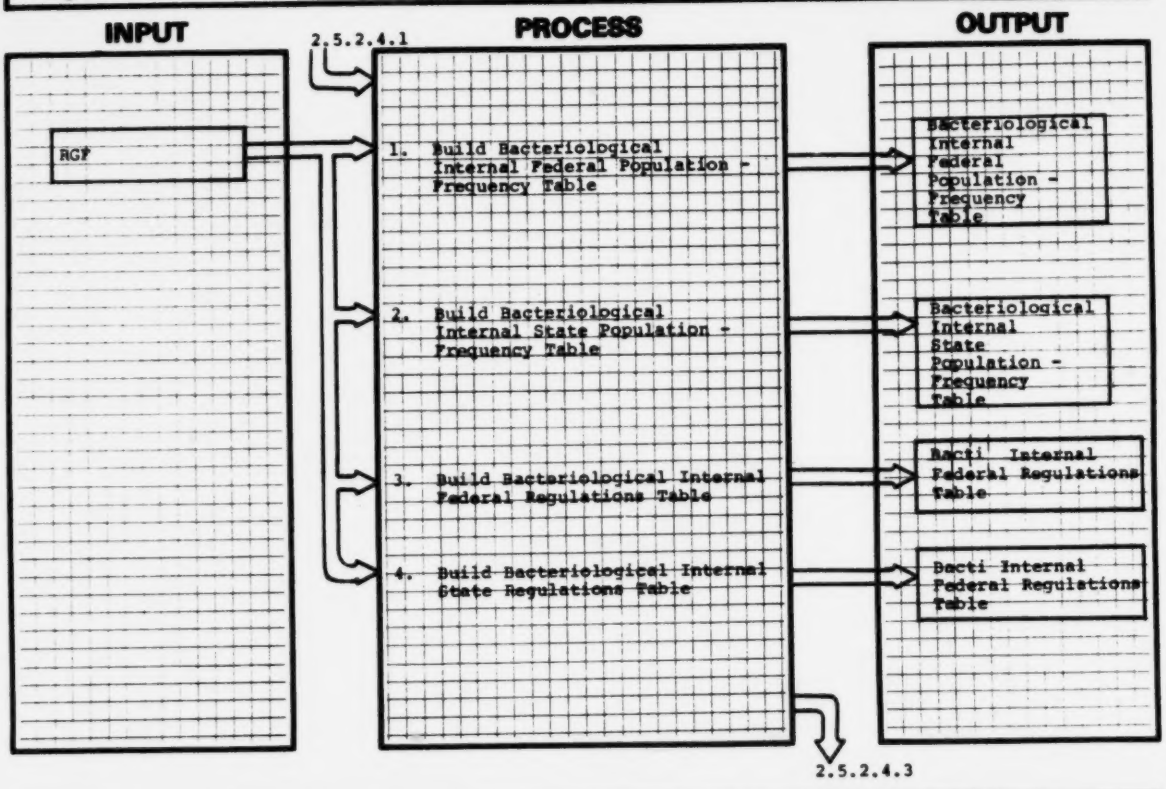


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Bacteriological Sample Analysis File (SAF) header record for zeros in the processing date. If there are zeros in the processing date, indicating program execution is to terminate, copy the header record to the updated SAF. Then build header records for the Maximum Contaminant Level (MCL) and Sampling Violations File which also have zeros for processing date. Finally, close the files and terminate the program. If the processing date is not zeros, build header records for the MCL and Sampling Violations Files containing all necessary information. In addition copy the SAF header record to the updated SAF.		WAQC034	213 221
2	If processing is to continue, build two sets of Compliance Cycle beginning and ending dates, one for monthly cycles and one for quarterly cycles (as referenced in Appendix A.4). Store the results in Julian mode.		WAQC034	221

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 4-13-77 Page: 1 of 1

Diagram No.: 2.5.2.4.2 Description: Build Bacteriological Internal Regulations Tables

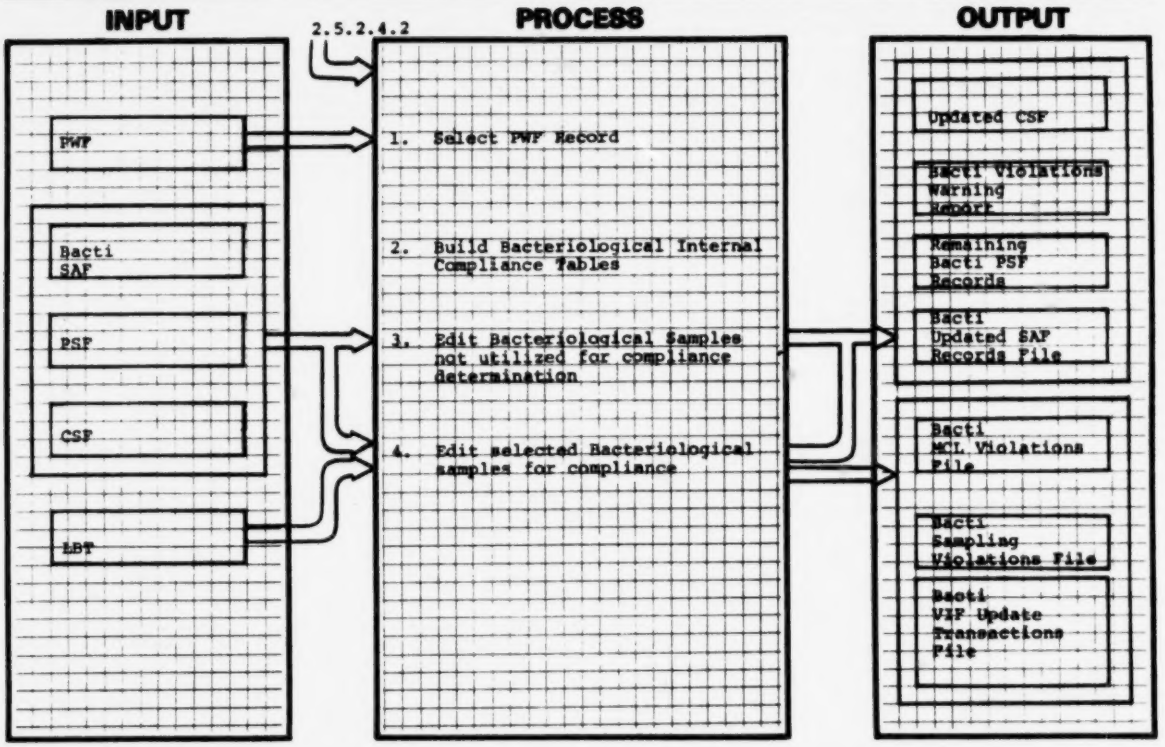

INPUT
2.5.2.4.1
PROCESS
OUTPUT
RGF
1. Build Bacteriological Internal Federal Population - Frequency Table
2. Build Bacteriological Internal State Population - Frequency Table
3. Build Bacteriological Internal Federal Regulations Table
4. Build Bacteriological Internal State Regulations Table
Bacteriological Internal Federal Population - Frequency Table
Bacteriological Internal State Population - Frequency Table
Bacti Internal Federal Regulations Table
Bacti Internal Federal Regulations Table
2.5.2.4.3

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a Bacteriological Internal Federal Population - Frequency Table from Regulations File (RGF) records with contaminant I.D. = "3000", regulation level = "FP" and table I.D. = "1"		WAQC034	REGS. 252
2	Build a Bacteriological Internal State Population - Frequency Table from RGF records with contaminant I.D. = "3000", regulation level = "SP" and table I.D. = "1"		WAQC034	REGS. 252
3	Build a Bacteriological Internal Federal Regulations Table from RGF records with contaminant I.D. = "3000", regulation level = "FP" and table I.D. ≠ "1"		WAQC034	REGS. 253
4	Build a Bacteriological Internal State Regulations Table from RGF records with contaminant I.D. = "3000", regulation level = "SP" and table I.D. ≠ "1"		WAQC034	REGS. 253

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 of 1

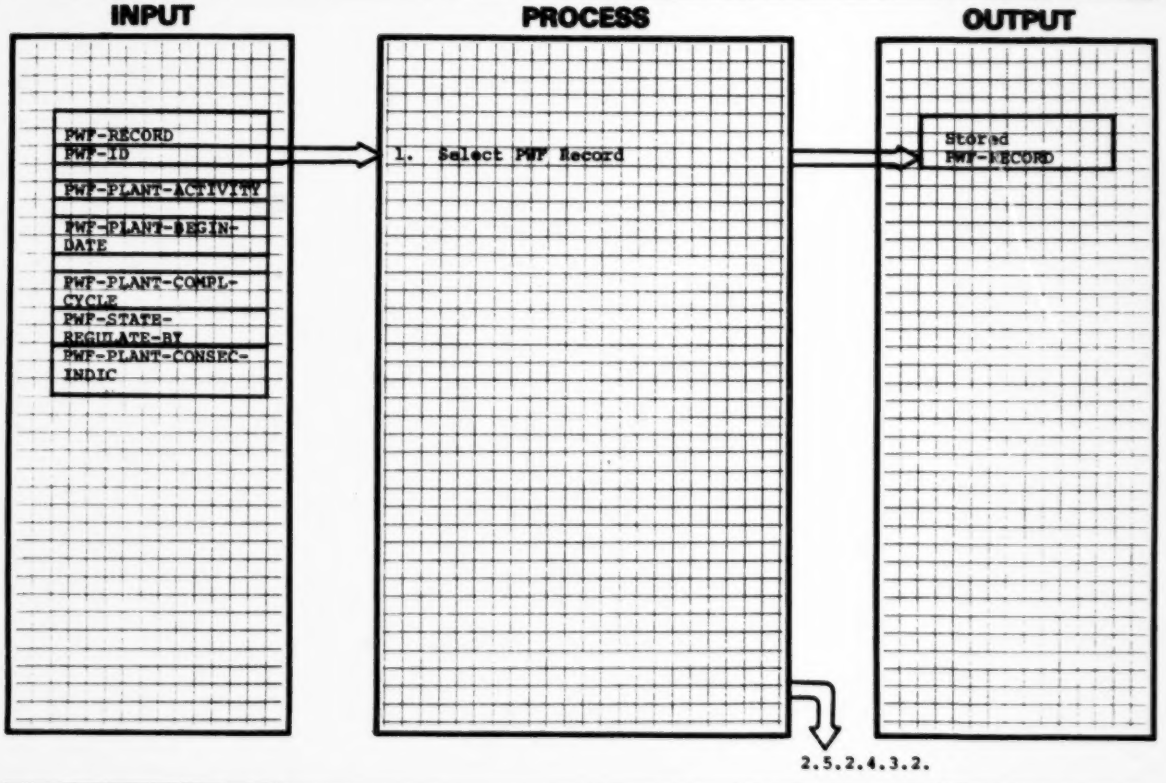
Diagram No.: 2.5.2.4.3 **Description:** Edit for Bacteriological Violations



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select Public Water File (PWF) records which will be: a. Not edited for compliance b. Edited for compliance but not during current cycle c. Edited for compliance during current cycle	2.5.2.4.3.1	WAQC034	
2	Build Internal Compliance Tables for those PWF-records to be utilized for compliance during current cycle.	2.5.2.4.3.2	WAQC034	
3	Edit the Public Water Systems (PWS's) not utilized for compliance determination by checking for extra samples on the Periodic Sample File (PSF). Records may be rewritten to the PSF or written to the Sample Analysis File (SAF).	2.5.2.4.3.3	WAQC034	
4	Edit the selected PWS's for compliance. PWS's adjudged in violation may cause records to be written to the Bacti MCL Violations File, the Sampling Violations File and Violations File (VIF) Update Transactions File. Records from the PSF utilized for compliance are summarized and written to the SAF. The Laboratory Table (LBT) is used to obtain lab name for the Bacti Violations Files.	2.5.2.4.3.4	WAQC034	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 of 1
Diagram No.: 2.5.2.4.3.1 **Description:** Select PWF Record

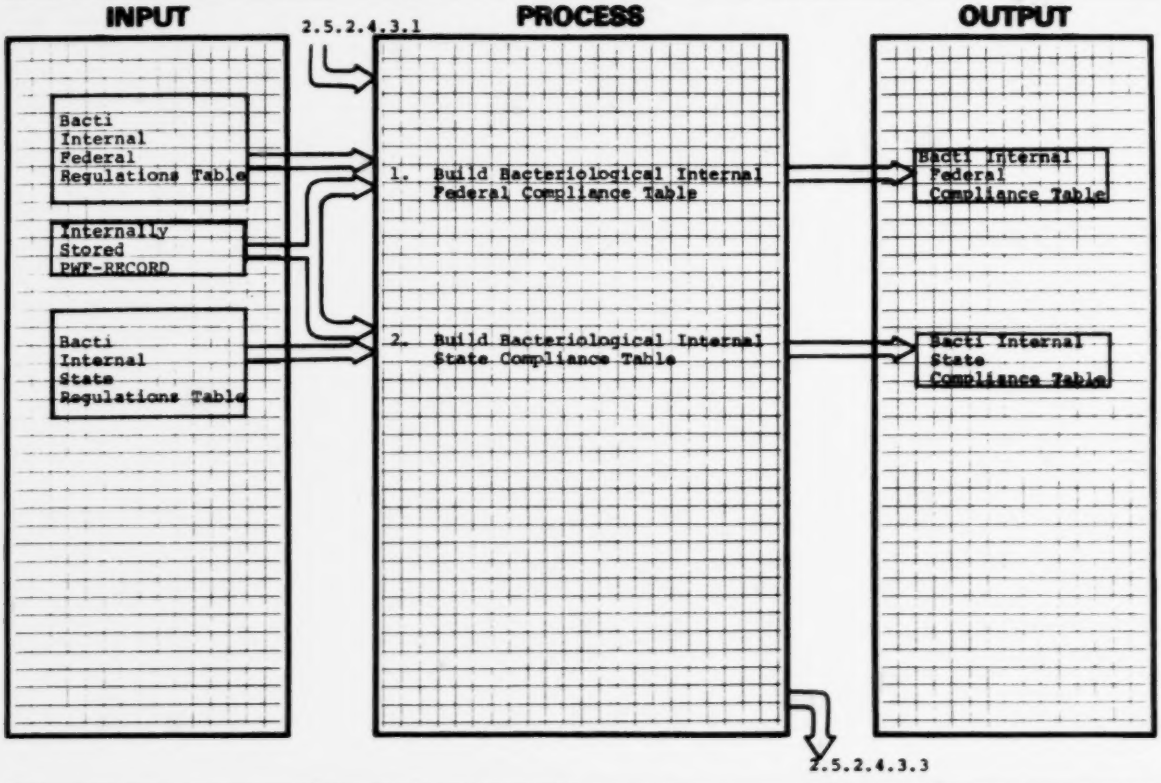


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select those Public Water File (PWF) records which require some kind of processing, compliance or otherwise. Each PWF record represents a Public Water System (PWS). Each PWS is checked for exclusion from compliance processing. A PWS is excluded from compliance processing if: a. It is inactive (PWF-PLANT-ACTIVITY='I') or b. It has not begun to operate (PWF-PLANT-BEGIN-DATE greater than current date) or c. It is regulated by neither State nor Federal Regulations (PWF-STATE-REGULATE-BY="N") or d. It is a consecutive PWS not required to monitor water quality (PWF-PLANT-CONSEC-INDICATOR='1') If a PWS is not excluded from compliance processing, determine whether it monitors on a monthly, quarterly or special basis (see Appendix B.4). Then check to see if this PWS is to be processed for compliance (PWF-PLANT-COMPL-CYCLE equal to compliance cycle on SAFI-HEADER-COMP-RECORD for monthly, quarterly processing flag (see Appendix A.4) is on or the PWS requires special processing.)		WAQC034	PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 of 2

Diagram No.: 2.5.2.4.3.2 **Description:** Build Bacteriological Internal Compliance Tables

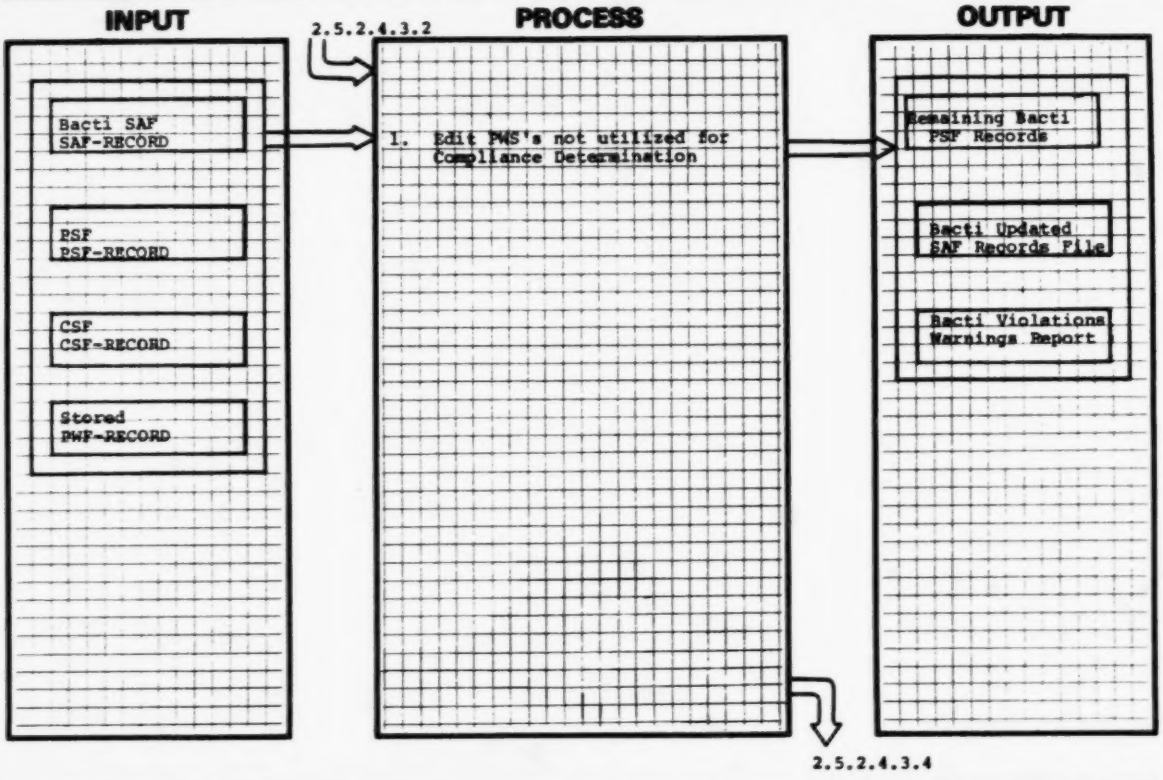


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a Bacteriological Internal Federal Compliance Table for the current Public Water System (PWS) by combining information from the Bacteriological Internal Federal Regulations Table and the Public Water File (PWF) Record for the Current PWS. THis table will be utilized for determining compliance with the Federal Regulations for the current PWS.		WAQC034	PWSI. 200
2	Build a Bacteriological Internal State Compliance Table for the current PWS by combining information from the Bacteriological Internal State Regulations Table and the PWF Record for the current PWS. This table will be utilized for determining compliance with the State Regulations for the current PWS.			
	NOTE: For a more detailed description of this process, see Appendix C.4.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.4.3.3 **Description:** Edit PWS's not Utilized for Compliance Determination

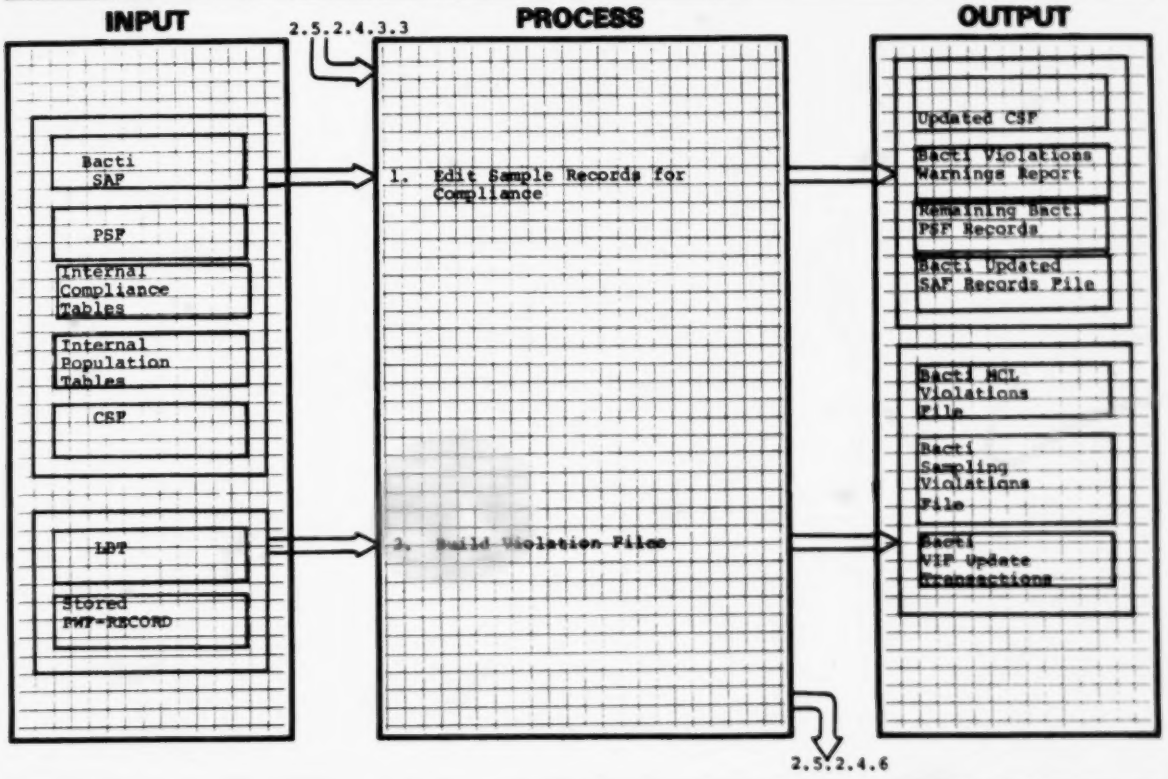


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If it was determined that a Public Water File (PWF) Record was not to be processed for the current compliance period (See HIPO 2.5.2.4.3.]), check all the records on the Periodic Sample File (PSF) having the same PWS-ID to see if: a. A compliance cycle was missed - copy PSF records to remaining PSF. b. Extra PSF records were added after compliance was run for a given PWS - copy PSF records to the Sample Analysis File (SAF). c. New records are accumulating on the PSF for the next compliance period (normal occurrence). Warnings are written to the Bacteriological Violations Warnings Report if: a. A compliance cycle was missed. b. Extra PSF records were added after compliance was run. This check is described in detail in Appendix G.4.		WAQC034	251 254 326

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 of 1

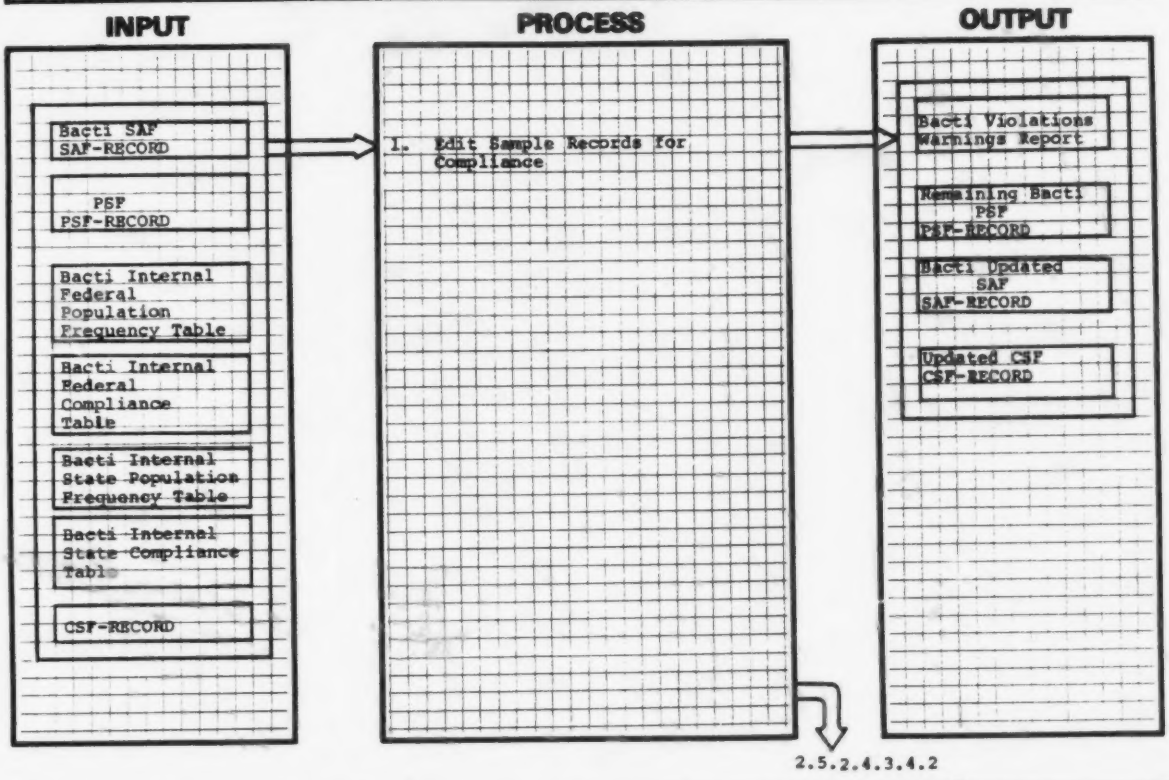
Diagram No.: 2.5.2.4.3.4 **Description:** Edit Selected PWS's for Compliance



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit those records on the Periodic Sample File (PSF) associated with the selected PWS for Bacteriological compliance. Only regular and check samples are used in determining compliance; all others are summarized and written to the Sample Analysis File (SAF). Records too old to be utilized for compliance determination are copied to the SAF. After processing all such records, a single message per PWS is written to the Bacteriological Warnings Report.	2.5.2.4. 3.4.1	WAQC034	
2	Build Violations Files records for a PWS which was determined in Step 1 to be in violation.	2.5.2.4. 3.4.2	WAQC034	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 of 1
Diagram No.: 2.5.2.4.3.4.1 **Description:** Edit Sample Records for Compliance

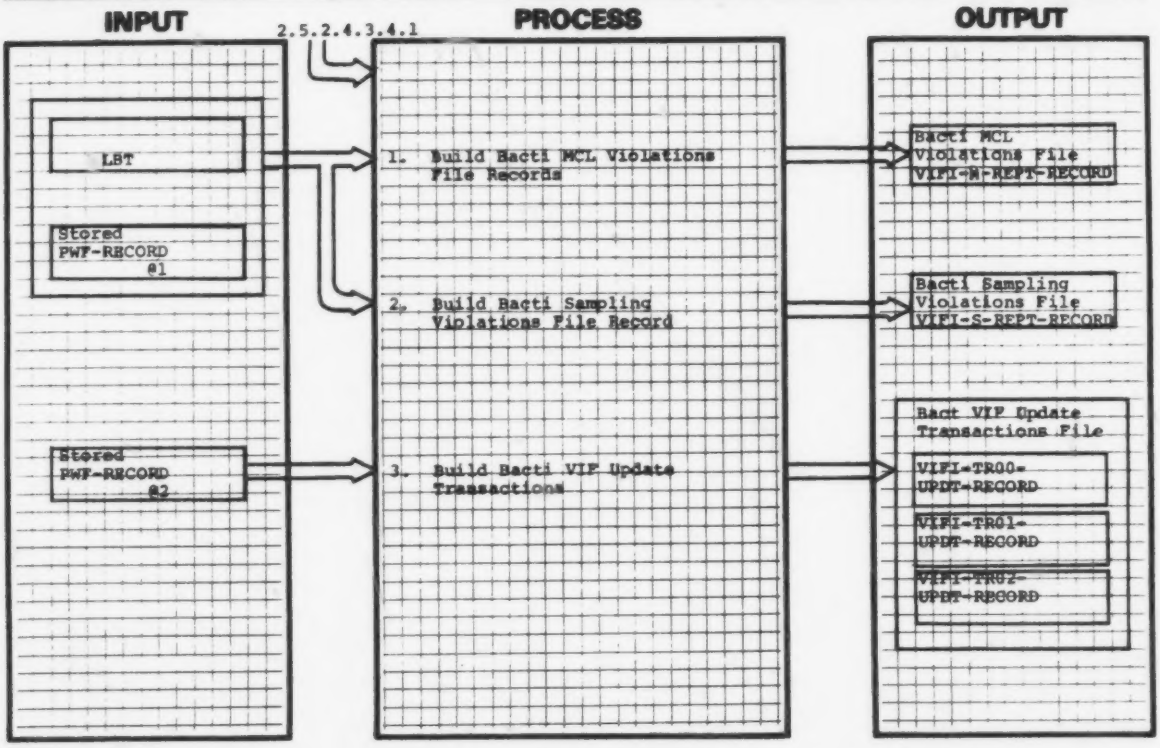


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Sample records on the Periodic Sample File (PSF) associated with a selected Public Water System are edited for compliance. The Compliance Status File (CSF) is first checked to see if compliance had already run for the current compliance period so erroneous violations are not issued. PSF Records containing samples taken before the compliance period are copied to the SAF and are not used for compliance. PSF Records containing samples taken after the compliance period are too new to be used and are copied to the remaining PSF. For those PSF Records containing samples taken during the compliance period: a. Samples other than regular and check are written to the SAF. b. Regular and check samples are used to determine compliance with Federal and State Regulations by comparing the samples to the Federal and State Compliance and Populations Tables. The samples are then summarized and written to the SAF. Warnings are written to the Bacteriological Violations Warnings Report if: a. Compliance was already run for the current compliance period (only produced once). b. Old sample records are copied from the PSF to the SAF. c. A single sample is in violation but has no location code therefore no check samples Refer to Appendix E.4 to a more complete description of the Compliance Edit.		WAQC034	251 254 326

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4-13-77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.4.3.4.2 **Description:** Build Violation Files



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build Bacteriological MCL Violations File Records if the selected PWS had any MCL Violations. Up to four records could be built a. Federal Single Sample MCL b. State Single Sample MCL c. Federal Monthly Avg. MCL d. State Monthly Avg. MCL		WAQC034	216 250 256
2	Build Bacteriological Sampling Violations File Records if the selected PWS had any sampling violation. Up to four records could be built: a. Federal Regular Sampling b. State Regular Sampling c. Federal Check Sampling d. State Check Sampling		WAQC034	231 250 256
3	For each of the Violations records built in Steps (1) and (2) above, build a set of Violations File (VIF) Update Transactions. Each set consists of three transactions, each containing different information. These transactions are used as input to module WAQC120 which updates the VIF. NOTE: For a more detailed description of the building of the aforementioned records, see Appendix F.4.		WAQC034	223 224 225

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC035
DATE: April 10, 1977

I. OBJECTIVES:

The objective of this program is to edit the Gross Alpha Records from the Contaminant Sample Analysis File (SAF) and the Periodic Sample File (PSF) for Maximum Contaminant Level (MCL) and Sampling violations. The MCL violations are used to build the Gross Alpha MCL Violations File (VIF) which is passed to WAQC041. The Sampling violations are used to produce the Gross Alpha Sampling VIF which is passed to WAQC061. Both MCL and Sampling violations are used to produce the Gross Alpha VIF Update Transactions File which is passed to WAQC120.

This program also builds the Gross Alpha Remaining Periodic Sample File (PSF) and the Gross Alpha Updated Sample Analysis File (SAF).

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Gross Alpha Sample Analysis File	SAFI-HEDR-COMP-RECORD	WAQC.221
	SAF-RECORD	WAQC.254
2. Periodic Sample File	PSF-HEADER-RECORD	WAQC.251
	PSF-RECORD	WAQC.252
3. Public Water File	PWF-RECORD	PWSI.200
4. Compliance Status File	CSF-RECORD	WAQC.257
5. Regulations File	RGF-ALPHA-RECORD	REGS.256
6. Laboratory Table	LBT-RECORD	WAQC.250
	LBT-HDR-RECORD	WAQC.256

B. PROCESSING OPTIONS RECORD:

Not Applicable

III. OUTPUTS:

A. RECORD LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Compliance Status File	CSF-RECORD	WAQC.257
2. Gross Alpha Remaining Periodic Sample File	PSF-RECORD	WAQC.252
3. Gross Alpha Sample Analysis File	SAFI-HEDR-COMP-RECORD SAF-RECORD	WAQC.221 WAQC.254
4. Gross Alpha MCL Violations File	VIFI-HEDR-REPT-RECORD VIFI-M-REPT-RECORD	WAQC.213 WAQC.216
5. Gross Alpha Sampling Violations File	VIFI-HEDR-REPT-RECORD VIFI-S-REPT-RECORD	WAQC.213 WAQC.231
6. Gross Alpha VIF Update Transactions File	VIFI-TR00-UPDT-RECORD VIFI-TR01-UPDT-RECORD VIFI-TR02-UPDT-RECORD	WAQC.223 WAQC.224 WAQC.225

B. REPORT LAYOUT:

NAME	EXHIBIT LAYOUT
1. Gross Alpha Warnings Report	WAQC.326

C. TURNAROUND DOCUMENTS:

Not Applicable

IV. FUNCTIONS:

1. Verify the Gross Alpha Sample Analysis File (SAF) header record by checking the date to determine if processing is to continue and what information is to be copied to the header records of the Gross Alpha Updated SAF Record, MCL Violations, and Sampling Violations Files (VIF's).

2. Build the Gross Alpha Internal Regulations Tables from information extracted from the Regulations File (RGF).

3. Edit the Gross Alpha Samples from the Periodic Sample File (PSF) and the Gross Alpha SAF against information from the Compliance Status File (CSF), the Public Water File (PWF), and the Internal Regulations Tables built in step 2. The edits can result in building Gross Alpha MCL Violations Records, Gross Alpha Sampling Violations

Records, Gross Alpha VIF Update Transactions, Gross Alpha Violations Warnings Report messages, an Updated CSF, Gross Alpha Remaining PSF Records, and Gross Alpha Updated SAF Records. The Laboratory Table (LBT) is used to provide the Lab Name for the MCL VIF.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions

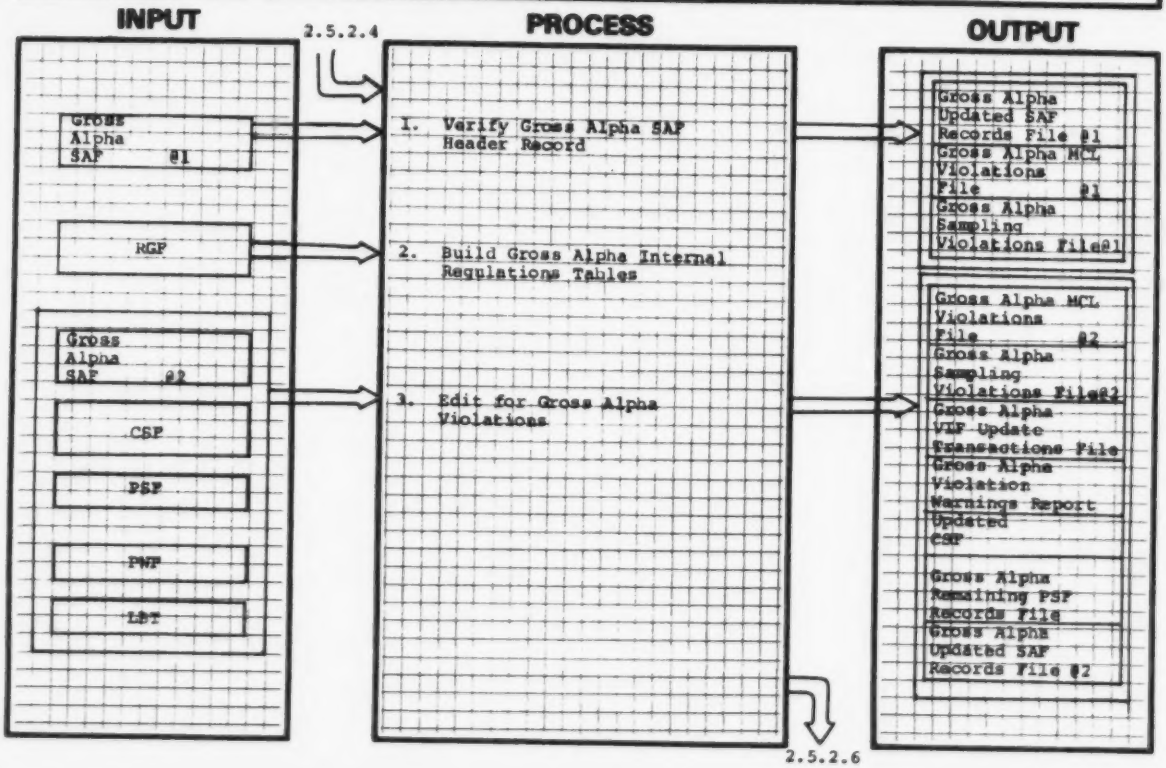
Not Applicable

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

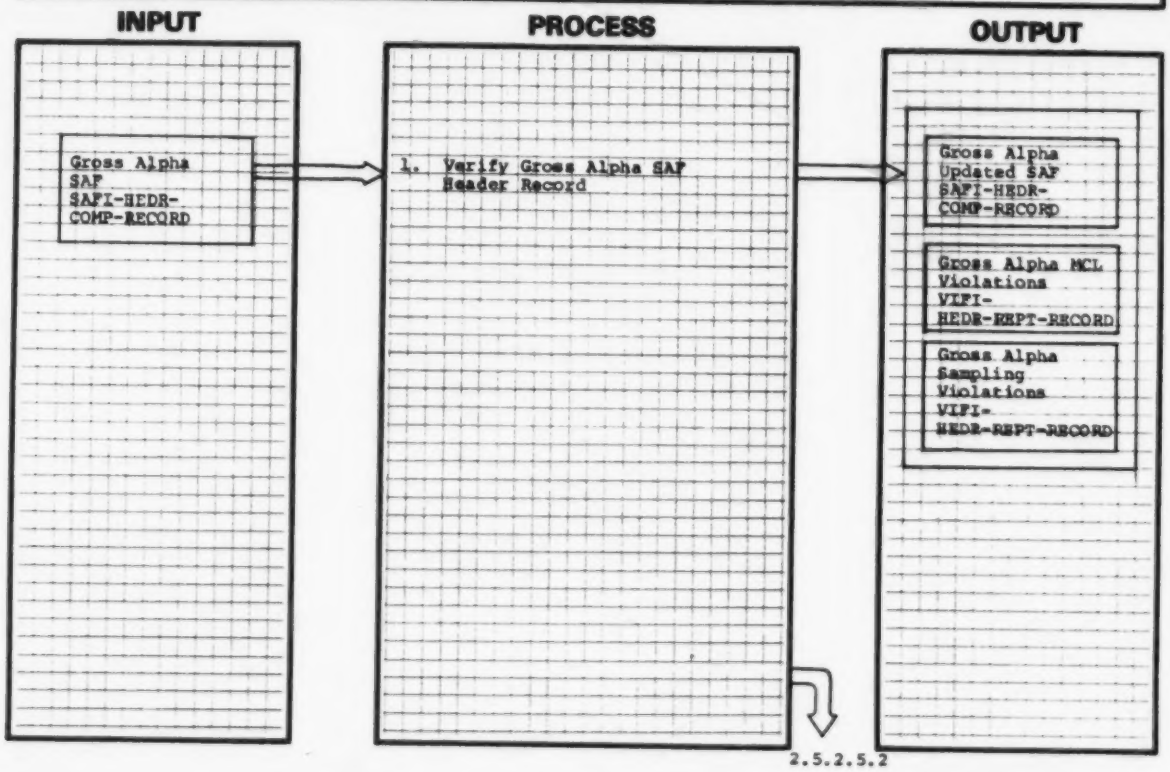
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1
Diagram No.: 2.5.2.5 **Description:** Edit for Gross Alpha Violations



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record on the Gross Alpha Sample Analysis File (SAF) by checking the date to determine if processing is to continue and what information is to be copied to the header records of the Gross Alpha Updated SAF Records, MCL Violations, and Sampling Violations Files.	2.5.2.5.1	WAQC035	
2	Build the Gross Alpha Internal Regulations Tables from information extracted from the Regulations File (RGF) records.	2.5.2.5.2	WAQC035	
3	Edit the Gross Alpha samples from the Gross Alpha SAF and the Periodic Sample File (PSF) against information from the Compliance Status File (CSF), the Public Water File (PWF), and the Internal Regulations Tables built in Step 2. The edits can result in creating Violations records, Violations File (VIF) and PWF Update Transaction records, Warnings Report messages, an Updated CSF, and Remaining PSF and Updated SAF Sample Records. The Laboratory Table (LBT) is used to provide LAB NAME for the MCL Violations File.	2.5.2.5.3	WAQC035	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 1
Diagram No.: 2.5.2.5.1 **Description:** Verify Gross Alpha SAF Header Record

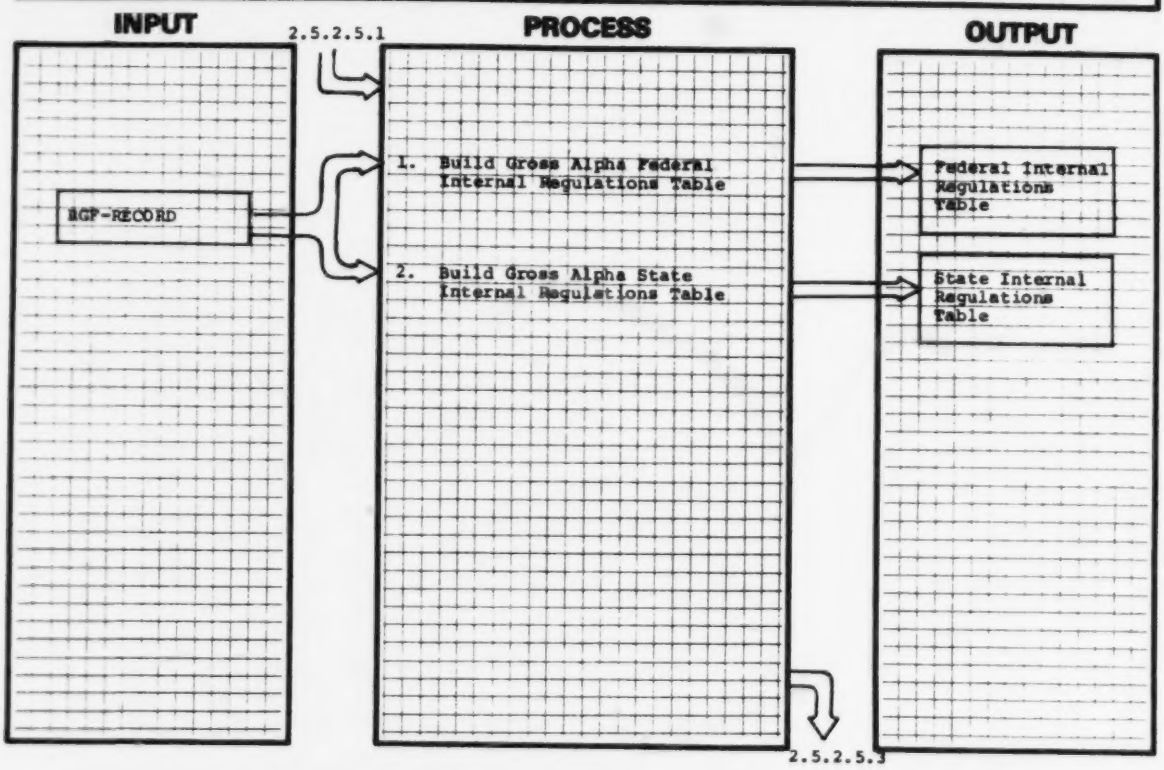


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Gross Alpha Sample Analysis File (SAF) Header Record (SAFI-HEDR-COMP-RECORD) for 'zeros' in the processing date (SAFI-HC-DATE) and build the header records for the Gross Alpha Updated SAF Records File (SAFI-HEDR-COMP-RECORD) for the Gross Alpha MCL Violations File (VIFI-HEDR-REPT-RECORD) and for the Gross Alpha Sampling Violations File (VIFI-HEDR-REPT-RECORD). If the processing date is 'zeros', the output file header records are built containing only the SAFI-HC-DATE value. This will terminate processing in those programs to which the header records are passed. If the processing date is not 'zeros', all the output file header records are built containing all the information in SAFI-HEDR-COMP-RECORD. This will permit normal processing in those programs to which the header records are passed. Note: The Gross Alpha Updated SAF Records File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC038 (HIPO 2.5.3.1). The Gross Alpha MCL Violations File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC041 (HIPO 2.5.4.1.4). The Gross Alpha Sampling Violations File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC061 (HIPO 2.5.4.2.4).		WAQC035	213 221

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.5.2 **Description:** Build Gross Alpha Internal Regulations Tables

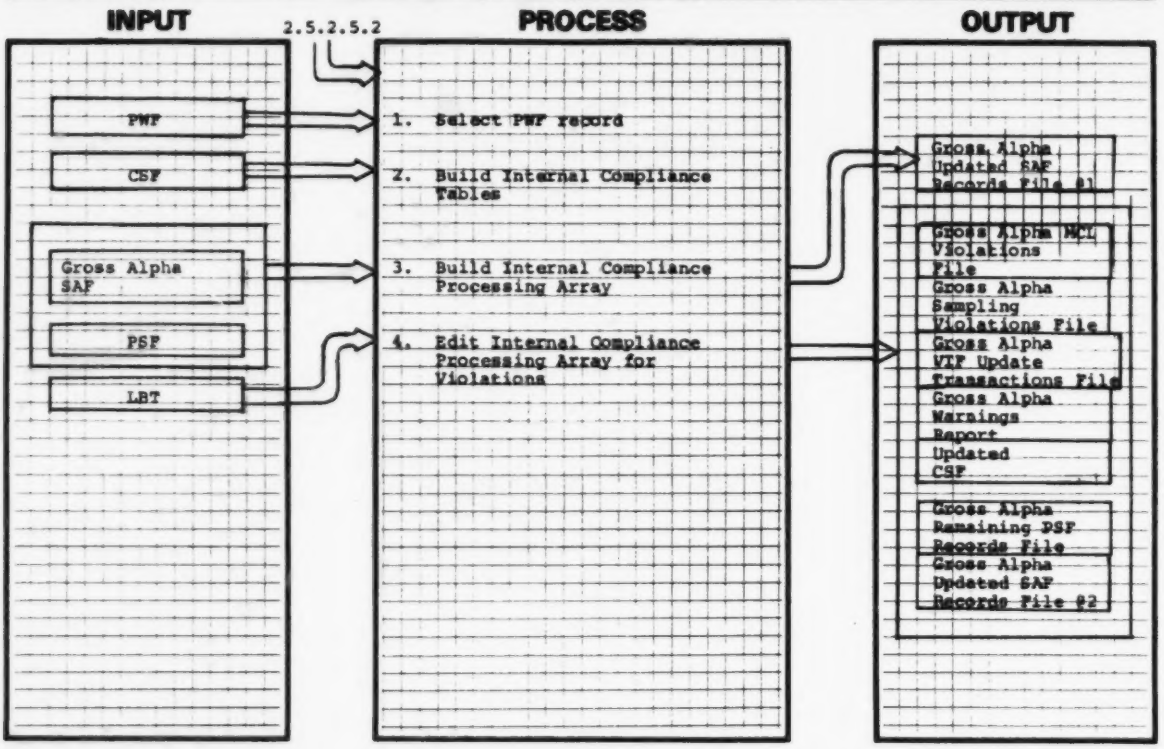


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Alpha Federal Internal Regulations Table by selecting information from the Federal records on the Regulations File (RGF) with a Contaminant Group code of '40' (the first two positions of Contaminant ID) and storing internally. Reference Appendix C.5 for a detailed description of the fields used.		WAQC035	REGS. 256
2	Build the Gross Alpha State Internal Regulations Table by selecting the information shown in Step 1 above from the State records on the RGF with a Contaminant Group code of '40'. Note: The Federal RGF records have the value of 'FP' in the REGU-LEVEL field, while the State RGF records have the value of 'SP' in the REGU-LEVEL field.		WAQC035	REGS. 256

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

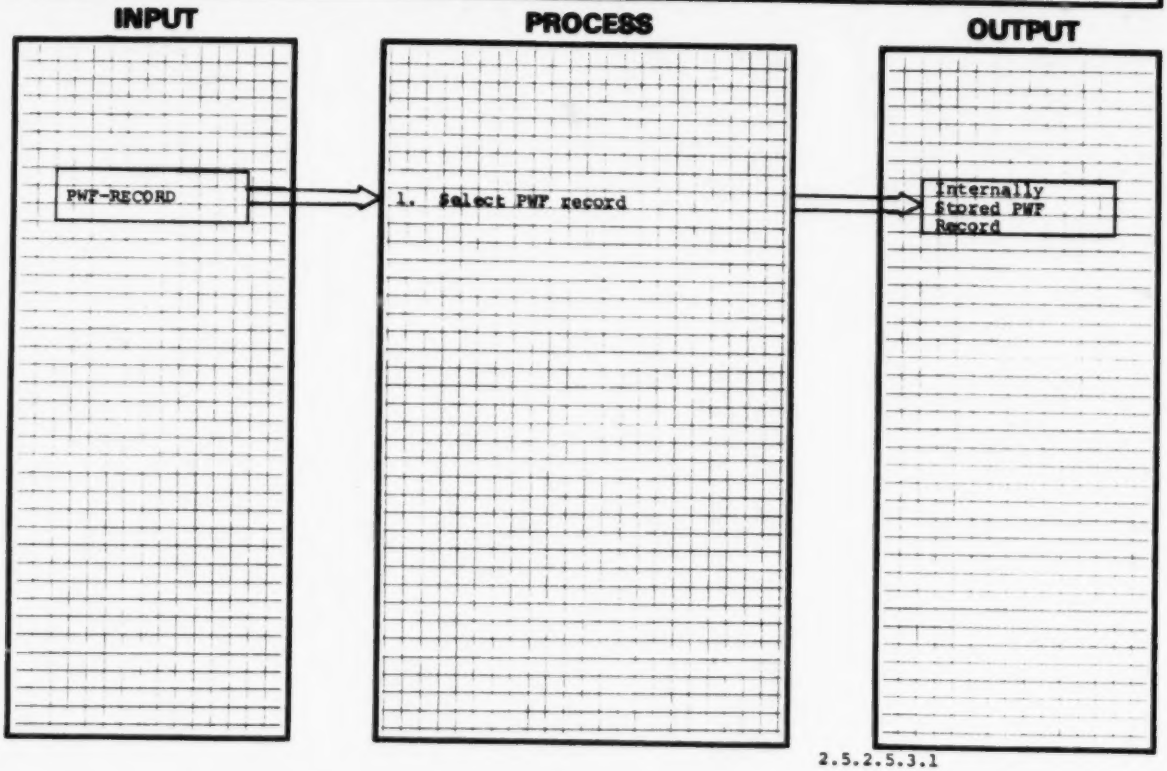
Diagram No.: 2.5.2.5.3 **Description:** Edit Each Public Water System for Gross Alpha Violations



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) record and store internally.	2.5.2.5.3.1	WAQC035	
2	Build the Internal Compliance Tables of edit values from the internally stored PWF record from Step 1, the Compliance Status File (CSF), and the Internal Regulations Tables.	2.5.2.5.3.2	WAQC035	
3	Build the Internal Compliance Processing Array from sample records from the Gross Alpha Sample Analysis File (SAF) and the Periodic Sample File (PSF). Gross Alpha sample records not to be used in processing violations are copied directly to the Gross Alpha SAF.	2.5.2.5.3.3	WAQC035	
4	Edit the Internal Compliance Processing Array for violations against the Internal Compliance Tables built in Step 2. Violations result in the creation of Maximum Contaminant Level (MCL) or sampling violation records and the creation of Violations File (VIF) Update transactions. Certain situations will result in the production of Warnings Report messages instead of violation records or transactions. Changes in the violation status of the Public Water System (PWS) result in updating of the CSF. Those PSF sample records not processed for violations are copied to the Remaining PSF, while all others, and the old SAF records, are copied to the Updated SAF. The Laboratory Table (LBT) is used to provide the Lab Name for the violation records. Note: See Appendix A.5 for Compliance Overview.	2.5.2.5.3.4	WAQC035	

MODEL STATE INFORMATION SYSTEM

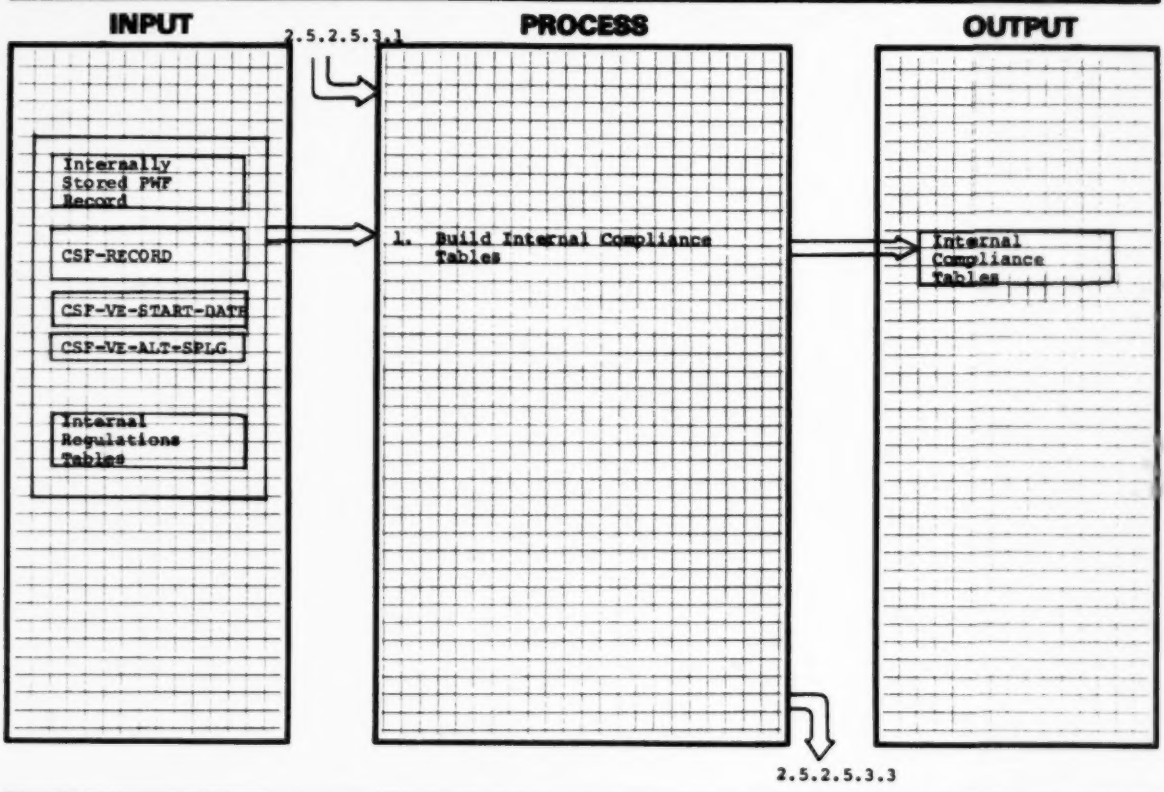
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 1
Diagram No.: 2.5.2.5.3.1 **Description:** Select PWF Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) records needed for Gross Alpha compliance and store internally. See Appendix B.5 for details.		WAQC035	PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1
Diagram No.: 2.5.2.5.3.2 **Description:** Build Internal Compliance Tables

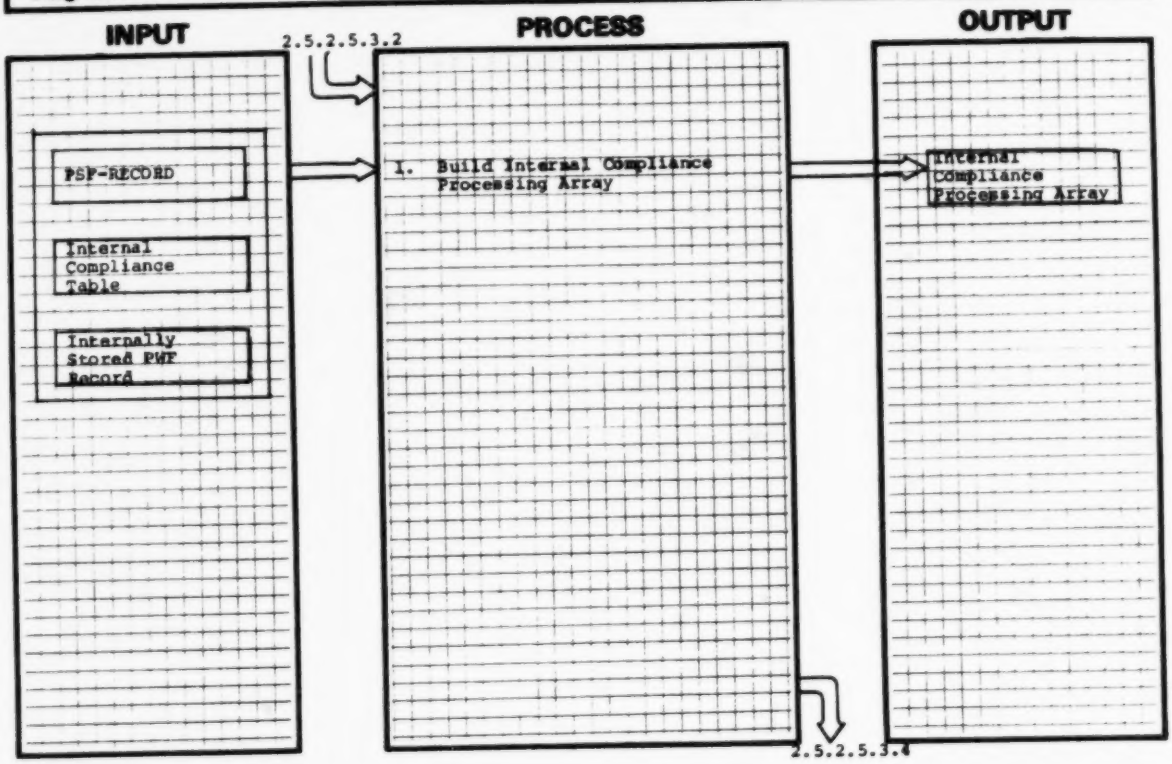


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Compliance Tables in the following manner: a. Information is copied from the Internal Regulations Tables into the Internal Compliance Tables. b. Information is added to the Internal Compliance Tables from the Internally Stored Public Water File (PWF) record as it pertains to the contaminant. c. The Internal Compliance Tables are modified by any Variance or Exemption information in the Internally Stored PWF record and the Compliance Status File (CSF) record for the Contaminant ID being processed. See Appendix C.5 for details.		WAQC035	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

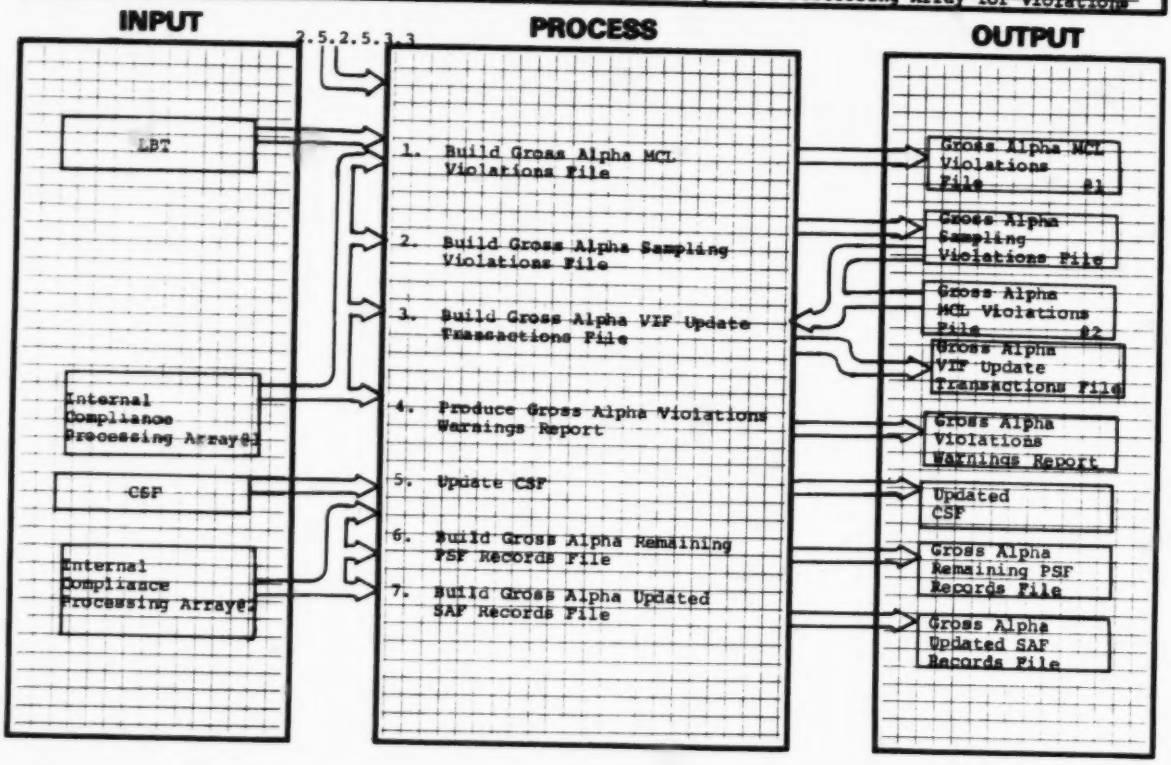
Diagram No.: 2.5.2.5.3.3 **Description:** Build Internal Compliance Processing Array



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Compliance Processing Array from those sample records selected from the Gross Alpha Periodic Sample File (PSF) for use in processing Maximum Contaminant Level (MCL) and Sampling violations. Those PSF Gross Alpha records not used in processing violations, as determined by information in the Internal Compliance Tables and the Internally Stored Public Water File (PWF) record, are copied to the Gross Alpha Updated SAF Records File without violation processing. See Appendix D.5 for details.		WAQC035	251 254

MODEL STATE INFORMATION SYSTEM

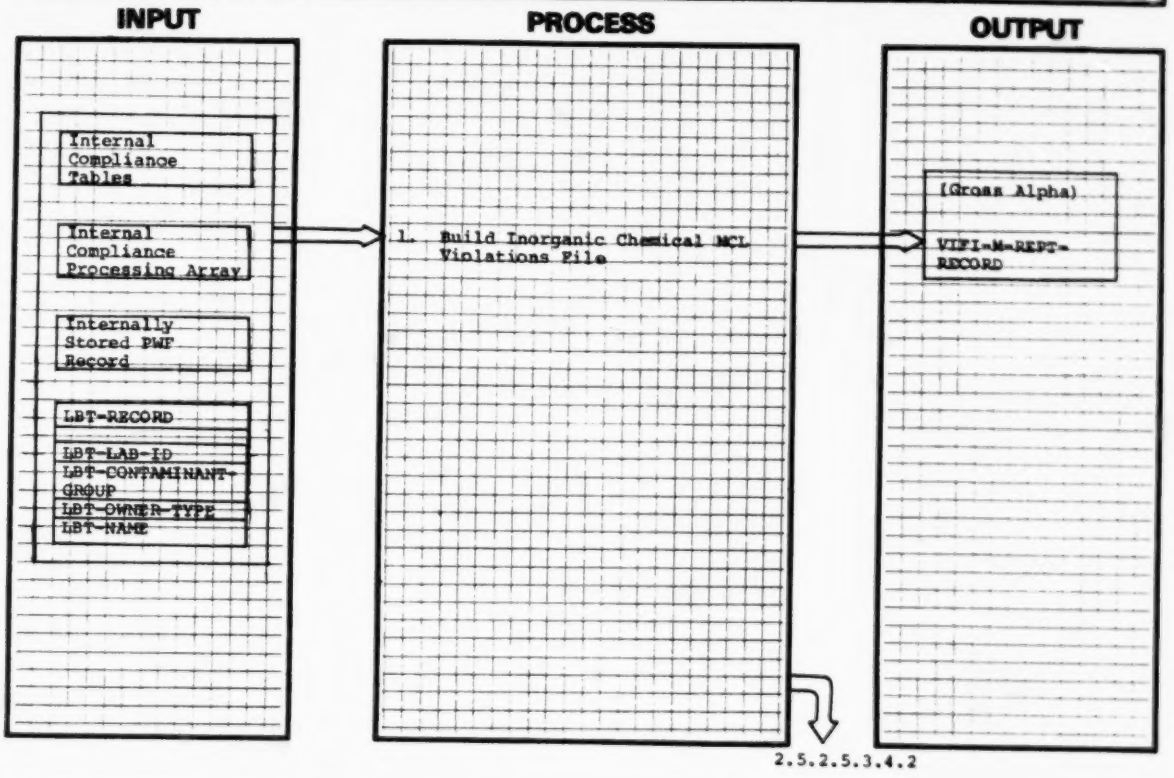
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1
Diagram No.: 2.5.2.5.3.4 **Description:** Edit Internal Compliance Processing Array for Violations


INPUT
PROCESS
OUTPUT
2.5.2.5.3.3
LBT
Internal Compliance Processing Array#3
CSF
Internal Compliance Processing Array#2
1. Build Gross Alpha MCL Violations File
2. Build Gross Alpha Sampling Violations File
3. Build Gross Alpha VIF Update Transactions File
4. Produce Gross Alpha Violations Warnings Report
5. Update CSF
6. Build Gross Alpha Remaining PSF Records File
7. Build Gross Alpha Updated SAF Records File
Gross Alpha MCL Violations File #1
Gross Alpha Sampling Violations File
Gross Alpha MCL Violations File #2
Gross Alpha VIF Update Transactions File
Gross Alpha Violations Warnings Report
Updated CSF
Gross Alpha Remaining PSF Records File
Gross Alpha Updated SAF Records File

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The Internal Compliance Processing Array is edited against the Internal Compliance Tables for Maximum Contaminant Level (MCL) and Sampling Violations. The edits result in the creation of several records depending on the particular circumstances:			
1	Internal Compliance Processing Array (CPA) records in violation of MCL requirements cause Gross Alpha MCL Violations File records to be built.	2.5.2.5.3.4.1	WAQC035	
2	Internal CPA missing records cause Gross Alpha Sampling Violations File records to be built.	2.5.2.5.3.4.2	WAQC035	
3	Either MCL or Sampling violations also cause Gross Alpha Violations File (VIF) Update transaction records to be built.	2.5.2.5.3.4.3	WAQC035	
4	Certain situations will produce messages in the Gross Alpha Warnings Report instead of the violation records in Steps 1, 2, and 3.	2.5.2.5.3.4.4	WAQC035	
5	Changes in violation status of the Public Water System (PWS) cause the Compliance Status File (CSF) record to be updated.	2.5.2.5.3.4.5	WAQC035	
6	Those Periodic Sample File (PSF) Gross Alpha records not used for processing violations are copied to the Gross Alpha Remaining PSF Records File.	2.5.2.5.3.4.6	WAQC035	
7	Those PSF records used for compliance and the Sample Analysis File (SAF) records stored in the Internal Compliance Processing Array are copied to the Gross Alpha Updated SAF Records File. Note: See Appendix E.5 for details of violation processing.	2.5.2.5.3.4.7	WAQC035	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 2
Diagram No.: 2.5.2.5.3.4.1 **Description:** Build Gross Alpha MCL Violations File



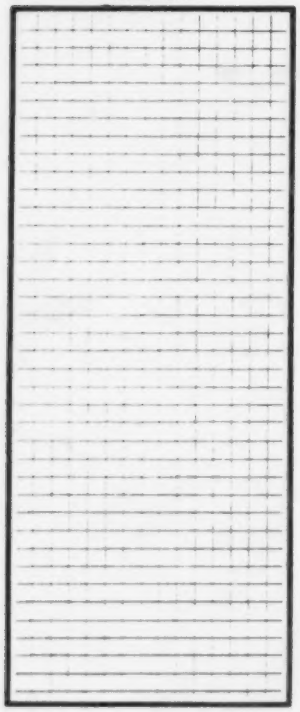
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Alpha Maximum Contaminant Level (MCL) Violations File records, VIFI-M-REPT-RECORD, from the Gross Alpha Internal Compliance Processing Array sample records flagged as being in violation of MCL requirements. The VIFI-M-REPORT-RECORDS are passed to program WAQC041 (HIPO 2.5.4.1.4) to be used to produce the Radiological MCL Violations Report. The VIFI-M-VIOLATION-TYPE field is set to '01'. The remainder of the fields in the VIFI-M-REPORT-RECORD, as listed below, are filled from the sources indicated: From the Internally Stored Public Water File (PWF) Record: VIFI-M-PWS-NAME VIFI-M-POPULATION VIFI-M-REGION VIFI-M-PWS-TYPE VIFI-M-SOURCE-CODE VIFI-M-DISTRICT From the Internal Compliance Tables: VIFI-M-MCL-VIOLATED VIFI-M-MCL-VIOL-DECIMALS Internally Generated: VIFI-M-REGULATION-LEVEL VIFI-M-VIOLATION-DATE VIFI-M-VIOLATION-DURATION		WAQC035	216 250 256

MODEL STATE INFORMATION SYSTEM

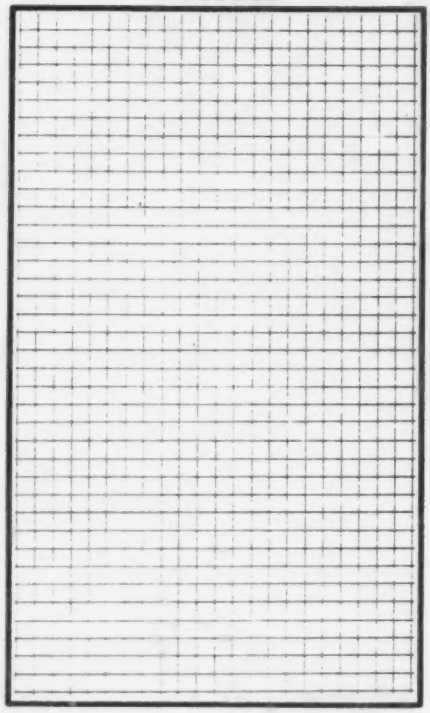
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 2 **of** 2

Diagram No.: 2.5.2.5.3.4.1 **Description:** Build Gross Alpha MCL Violations File

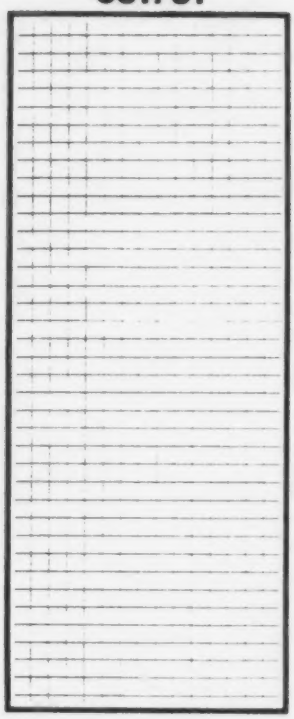
INPUT



PROCESS



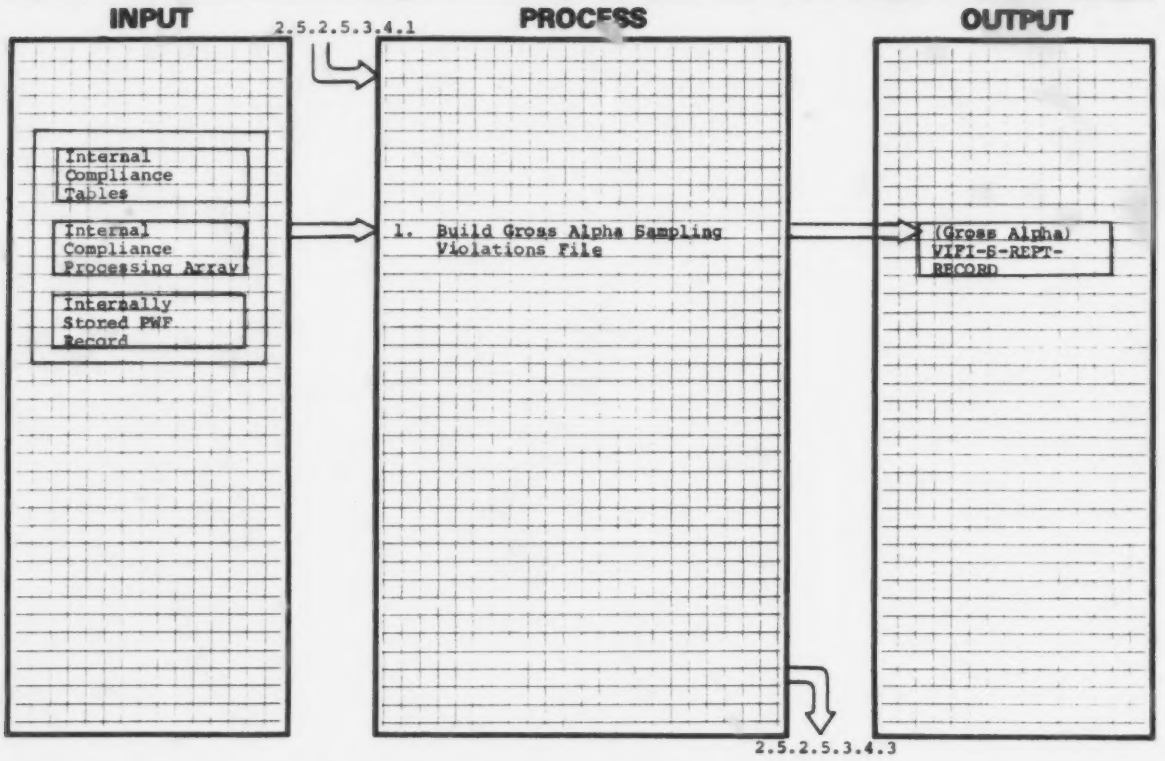
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	From the Internal Compliance Array: VIFI-M-PWS-ID VIFI-M-CONTAMINANT-ID VIFI-M-LAB-ID VIFI-M-SAMPLE-DATE VIFI-M-ANALYSIS-METHOD VIFI-M-ANALYSIS-REPORT VIFI-M-ANALYSIS-DECIMALS VIFI-M-ANALYSIS-DATE VIFI-M-SAMPLE-TYPE From the Laboratory Table (LBT): VIFI-M-LAB-NAME Notes: (1) All other VIFI-M-REPT-RECORD fields not mentioned here, if alphabetic, are set to blanks; if numeric, are set to zeros. (2) When copying the value for VIFI-M-SOURCE-CODE from the internal PWF record, check all available PWF-PLANT-SOURCE-CODE fields. If any are 'S' or 'P', then set the value of VIFI-M-SOURCE-CODE to 'S' (surface); otherwise set the value to 'G' (ground).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 2
Diagram No.: 2.5.2.5.3.4.2 **Description:** Build Gross Alpha Sampling Violations File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Alpha Sampling Violations File records, VIFI-S-REPT-RECORD, from information in the Gross Alpha Internal Compliance Processing Array (CPA) indicating Regular Sampling violations. The VIFI-S-REPORT-RECORDS are passed to program WAQC061 (HIPO 2.5.4.2.4) to be used to produce the Radiological Sampling Violations Report. The VIFI-S-VIOLATION-TYPE field is set to '03' if the violation is of Regular Sampling requirements. The remainder of the fields in the VIFI-R-REPORT-RECORD, as listed below, are filled from the sources indicated: From the Internally Stored Public Water File (PWF) Record: VIFI-S-PWS-NAME VIFI-S-POPULATION VIFI-S-REGION VIFI-S-PWS-TYPE VIFI-S-SOURCE-CODE VIFI-S-DISTRICT From the Internal Compliance Tables: VIFI-S-SAMPLES-NUM-REQUIRED VIFI-S-SAMPLING-FREQ-VIOL Internally Generated: VIFI-S-REGULATION-LEVEL VIFI-S-VIOLATION-DURATION VIFI-S-VIOLATION-DATE VIFI-S-SAMPLES-NUM-TAKEN VIFI-S-SAMPLING-CUTOFF-DATE		WAQC035	231

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 4/10/77 Page: 2 of 2

Diagram No.: 2.5.2.5.3.4.2 Description: Build Gross Alpha Sampling Violations File

INPUT

PROCESS

OUTPUT

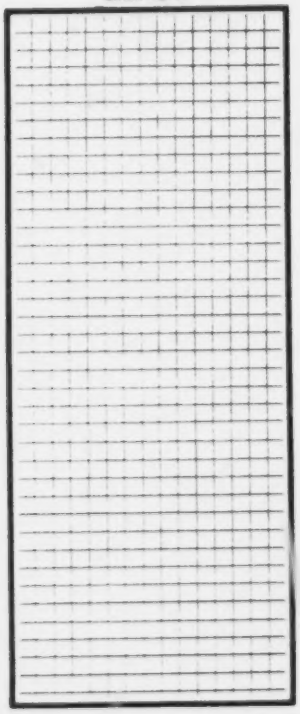
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	From the Internal Compliance Array: VIFI-S-PWS-ID VIFI-S-CONTAMINANT-ID VIFI-S-SAMPLE-DATE VIFI-S-SAMPLE-TYPE Notes: (1) All other VIFI-S-REPT-RECORD fields not mentioned here, if alphabetic, are set to blank; if numeric, are set to zero. (2) When copying the value for VIFI-S-SOURCE-CODE from the internal PWF record, check all available PWF-PLANT-SOURCE-CODE fields. If any are 'S' or 'P', then set the value of VIFI-S-SOURCE-CODE to 'S' (surface); otherwise set the value to 'G' (ground).			

MODEL STATE INFORMATION SYSTEM

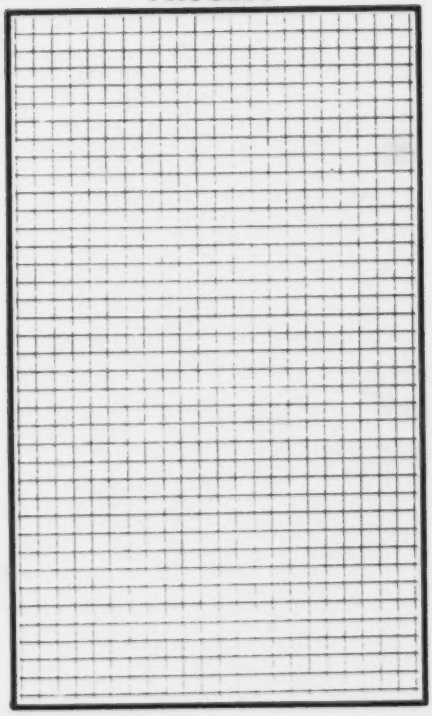
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 4/10/77 Page: 2 of 2

Diagram No.: 2.5.2.5.3.4.2 Description: Build Gross Alpha Sampling Violations File

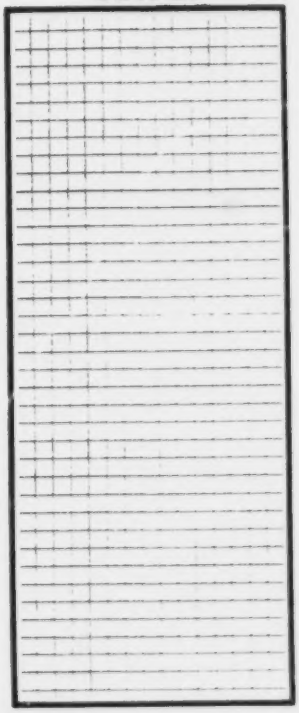
INPUT



PROCESS



OUTPUT

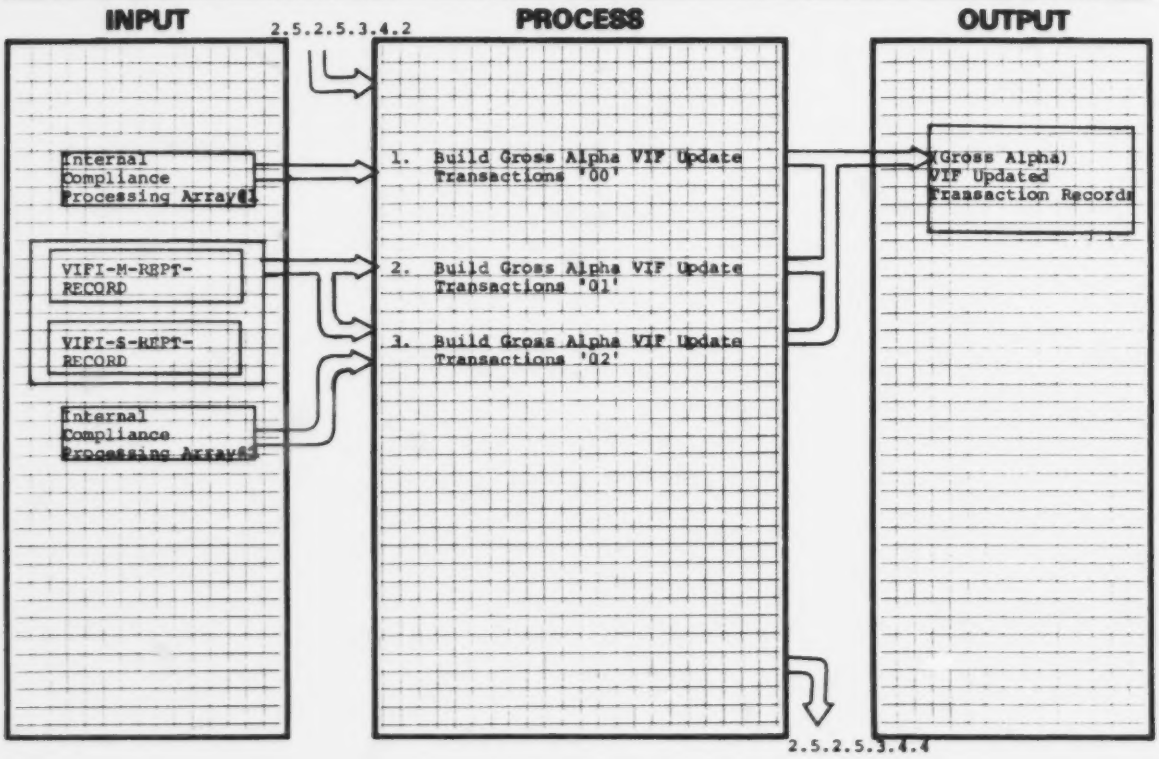


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	From the Internal Compliance Array: VIFI-S-PWS-ID VIFI-S-CONTAMINANT-ID VIFI-S-SAMPLE-DATE VIFI-S-SAMPLE-TYPE Notes: (1) All other VIFI-S-REPT-RECORD fields not mentioned here, if alphabetic, are set to blank; if numeric, are set to zero. (2) When copying the value for VIFI-S-SOURCE-CODE from the internal PWF record, check all available PWF-PLANT-SOURCE-CODE fields. If any are 'S' or 'P', then set the value of VIFI-S-SOURCE-CODE to 'S' (surface); otherwise set the value to 'G' (ground).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.5.3.4.3 **Description:** Build Gross Alpha VIF Update Transactions File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Alpha Violations File (VIF) Update transaction record with code = '00' in positions 6-7.	2.5.2.5.3.4.3.1	WAQC035	
2	Build the Gross Alpha VIF Update transaction record with code = '01' in positions 6-7.	2.5.2.5.3.4.3.2	WAQC035	
3	Build the Gross Alpha VIF Update transaction record with code = '02' in positions 6-7.	2.5.2.5.3.4.3.3	WAQC035	
	Note: These transaction records are built only if violations were determined in HIPO 2.5.2.5.3.4.1 or 2.5.2.5.3.4.2. All three transactions are built for each Federal Maximum Contaminant Level (MCL) violation, each State MCL violation, each Federal Sampling Violation, and each State Sampling Violation.			

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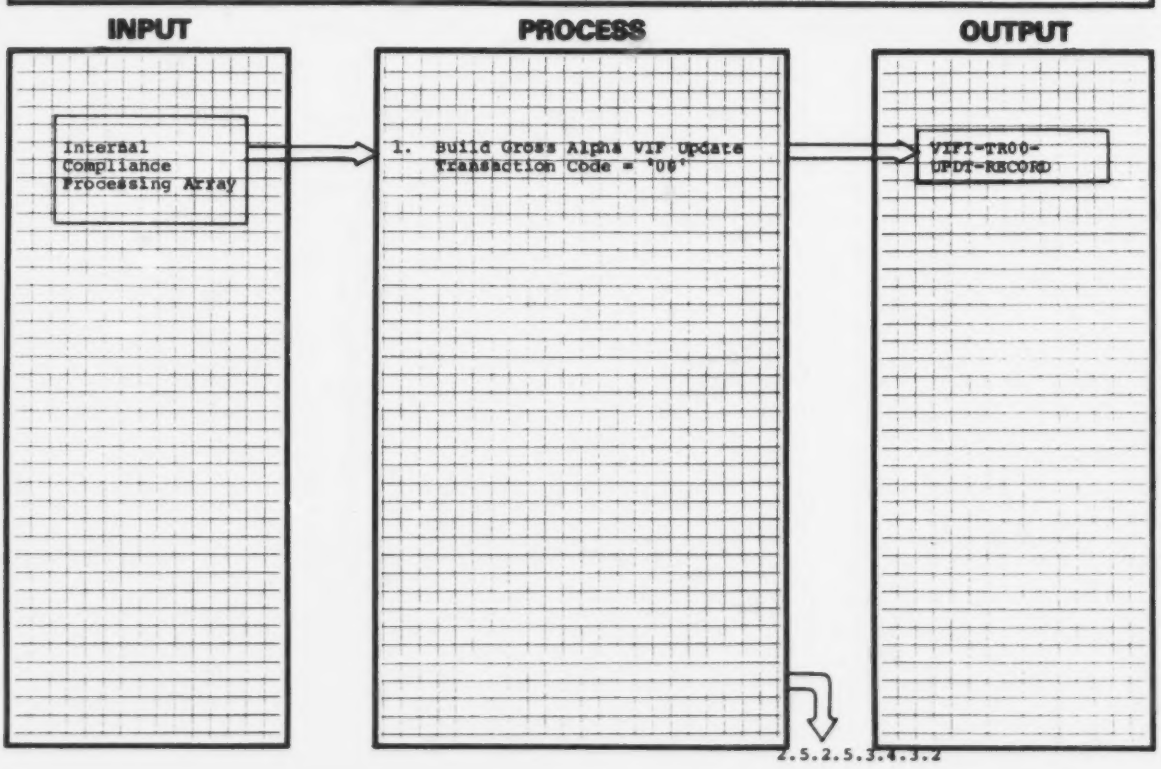
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 4/10/77 Page: 1 of 1

Diagram No.: 2.5.2.5.3.4.3.1 Description: Build Gross Alpha VIF Update Transactions - Code '00'

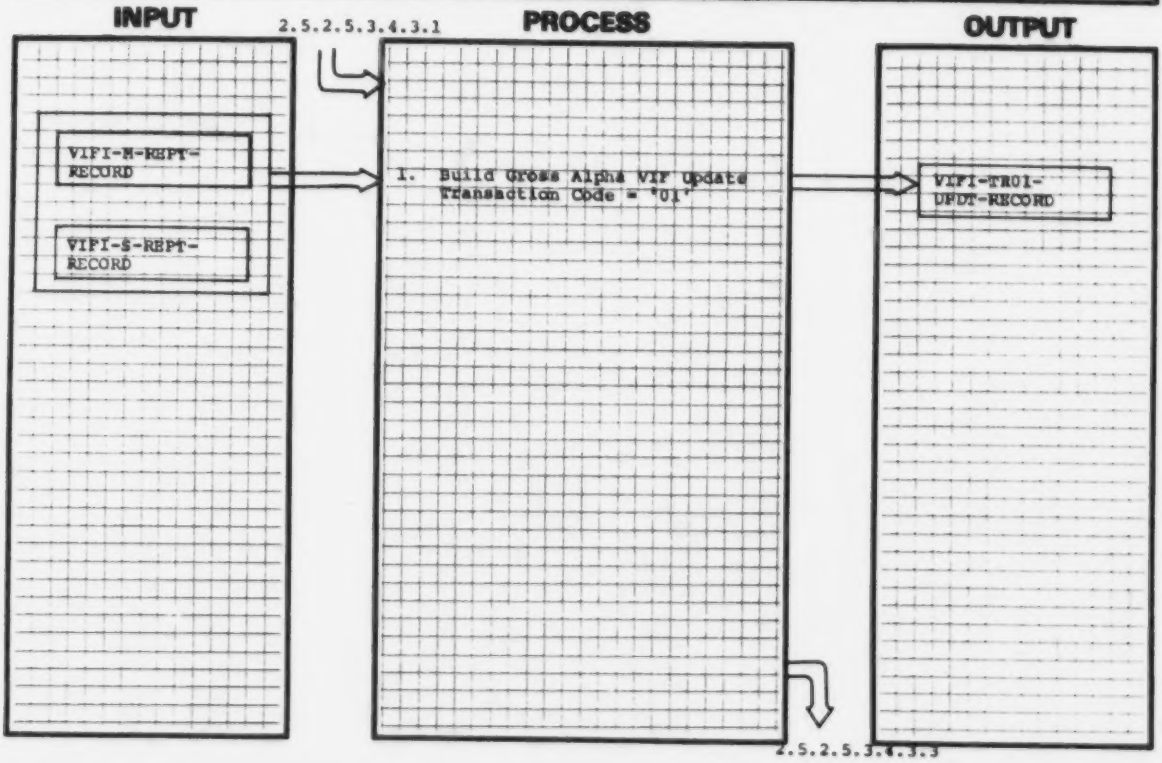


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the Internal Compliance Processing Array has Maximum Contaminant Level (MCL) or Sampling violations, as determined in HIPO's 2.5.2.5.3.4.1 and 2.5.2.5.3.4.2, the Violations File (VIF) Update Transaction record to create a new VIF record is built as follows: VIFI-TR00-VIOLATION-ID is set to blank. VIFI-TR00-TRANSACTION-CODE is set to '00'. VIFI-TR00-CREATE-DELETE-FLAG is set to 'Y'.		WAQC035	223

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 4/10/77 Page: 1 of 1

Diagram No.: 2.5.2.5.3.4.3.2 Description: Build Gross Alpha VIF Update Transaction - Code '01'

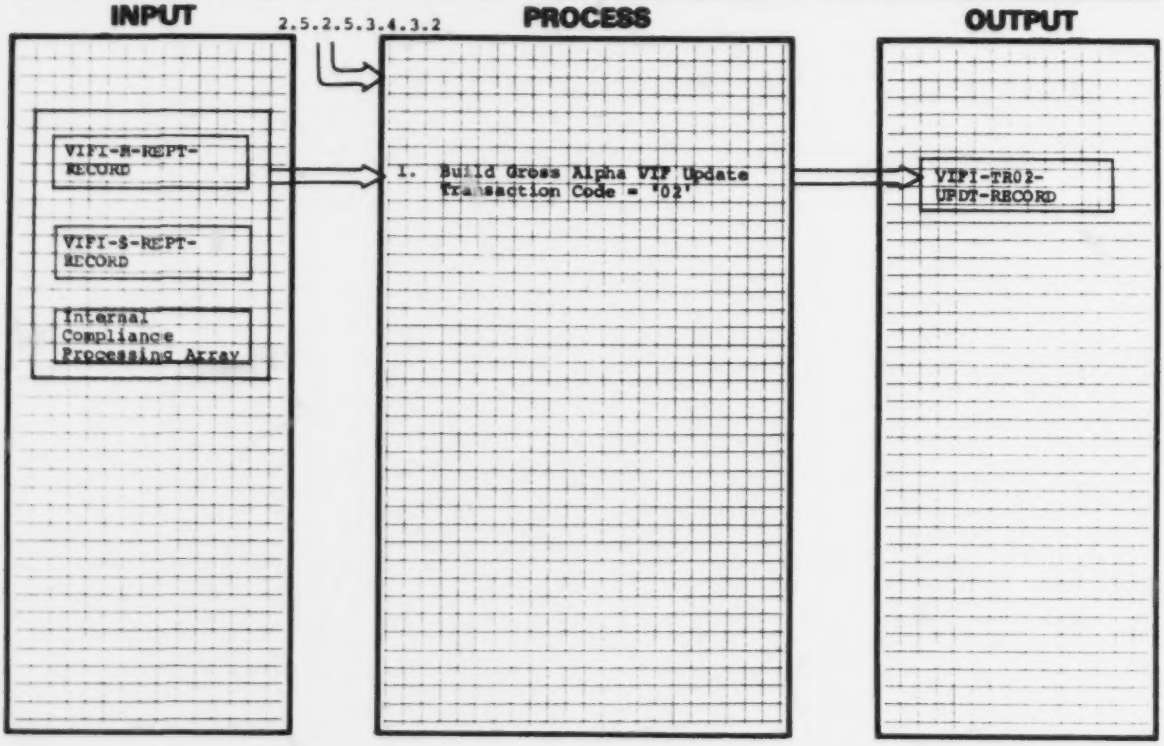


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the transaction code = '00' record was built in HIPO 2.5.2.5.3.4.3.1, then build the Violations File (VIF) Update transaction code = '01' record to build the new VIF record as follows: The VIFI-TR01-VIOLATION-ID is set to blanks. The VIFI-TR01-TRANSACTION-CODE is set to '01'. For Maximum Contaminant Level (MCL) violations, the remaining fields of the VIFI-TR01-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-M-REPT-RECORD built in HIPO 2.5.2.5.3.4.1. For Sampling violations, the remaining fields of the VIFI-TR01-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-S-REPT-RECORD built in HIPO 2.5.2.5.3.4.2.		WAQC035	216 224 231

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.5.3.4.3.3 **Description:** Build Gross Alpha VIF Update Transaction - Code '02'

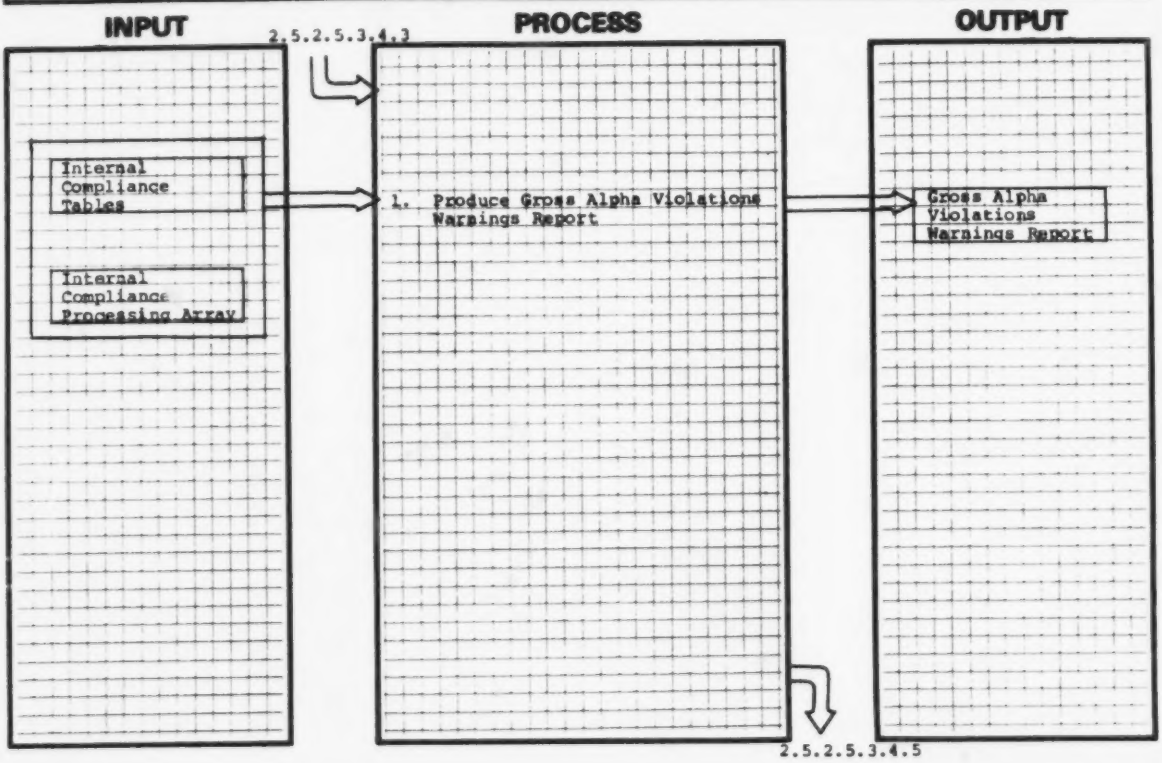


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the transaction code = '00' record was built in HIPO 2.5.2.5.3.4.3.1, then build the Violations File (VIF) Update transaction code = '00' record to build the new VIF record as follows: The VIFI-TR02-VIOLATION-ID is set to blanks. The VIFI-TR02-TRANSACTION-CODE is set to '02'. For Maximum Contaminant Level (MCL) violations, the remaining fields of the VIFI-TR02-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-M-REPT-RECORD built in HIPO 2.5.2.5.3.4.1. For Sampling violations, the remaining fields of the VIFI-TR02-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-S-REPT-RECORD built in HIPO 2.5.2.5.3.4.2. The VIFI-TR00-SAMPLE-KEY field is filled from the PSF-SAMPLE-KEY in the Internal Compliance Processing Array record.		WAQC035	216 225 231

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

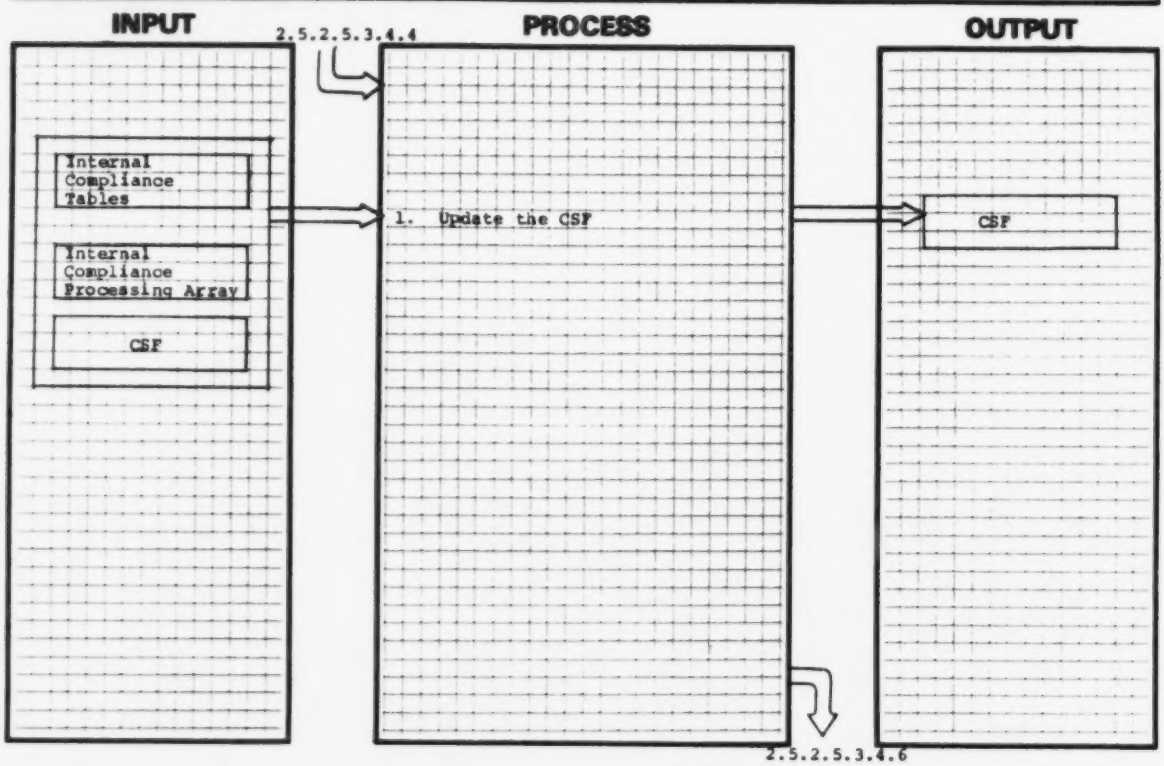
Diagram No.: 2.5.2.5.3.4.4 **Description:** Produce Gross Alpha Violations Warnings Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Due to enactment or cancellation of a sampling Variance or Exemption as shown in the Internal Compliance Tables, the Public Water System (PWS) is considered to be 'in transition' either into, in the case of enactment, or out of, in the case of cancellation, a Variance and Exemption Sampling period. In either case, the contaminants of the PWS are checked for Sampling Violations as in HIPO 2.5.2.5.3.4.2; but instead of Sampling violations, messages are produced on the Gross Alpha Warnings Report. If Regular Sampling violations are detected, the message is 'No Rglr Spls taken within the period XX/XX/XX to XX/XX/XX'. If Check Sampling violations are detected, the message is 'No Check Spls taken within the period XX/XX/XX to XX/XX/XX'.		WAQC035	326

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 1
Diagram No.: 2.5.2.5.3.4.5 **Description:** Update CSF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Compliance Status File (CSF) is updated for each Contaminant whenever the following changes occur: a. Federal Regular Sampling Period changes b. State Regular Sampling Period changes c. Federal Check Sampling Period changes d. State Check Sampling Period changes e. Maximum Contaminant Level (MCL) or Sampling Variance or Exemption enactment, change, or cancellation. See Appendix C.5 for details.		WAQC035	257

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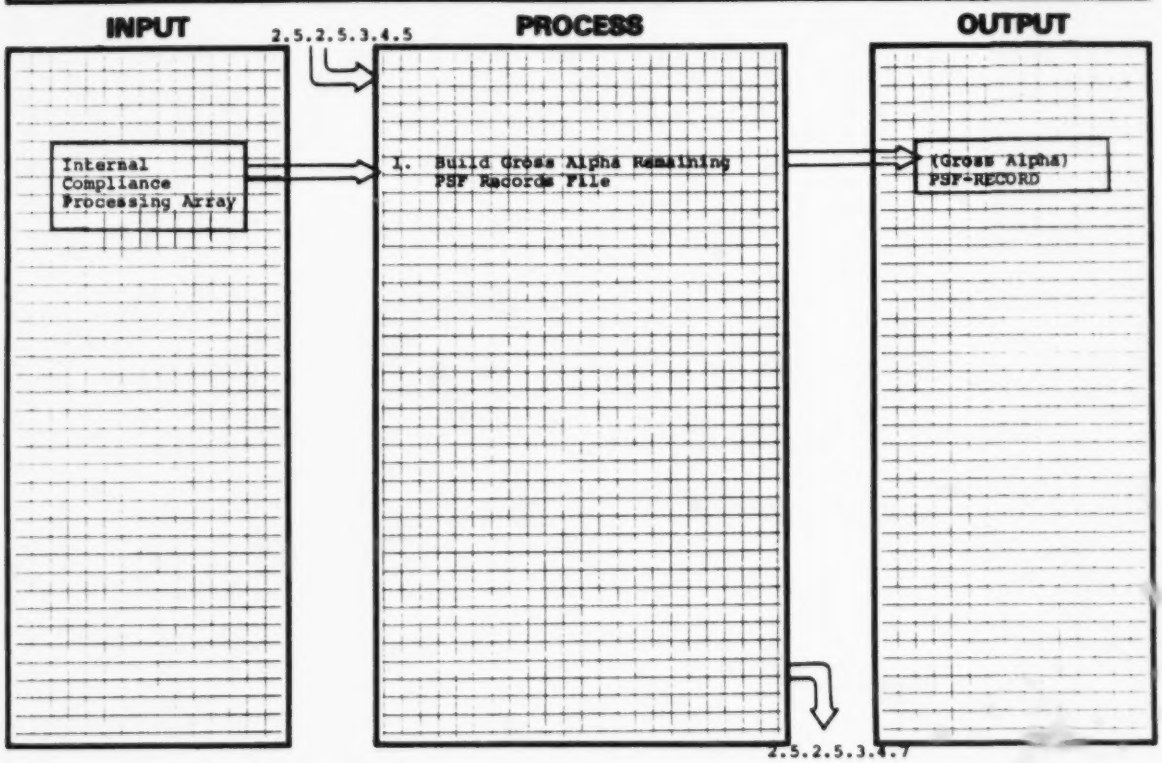
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 4/10/77 Page: 1 of 1

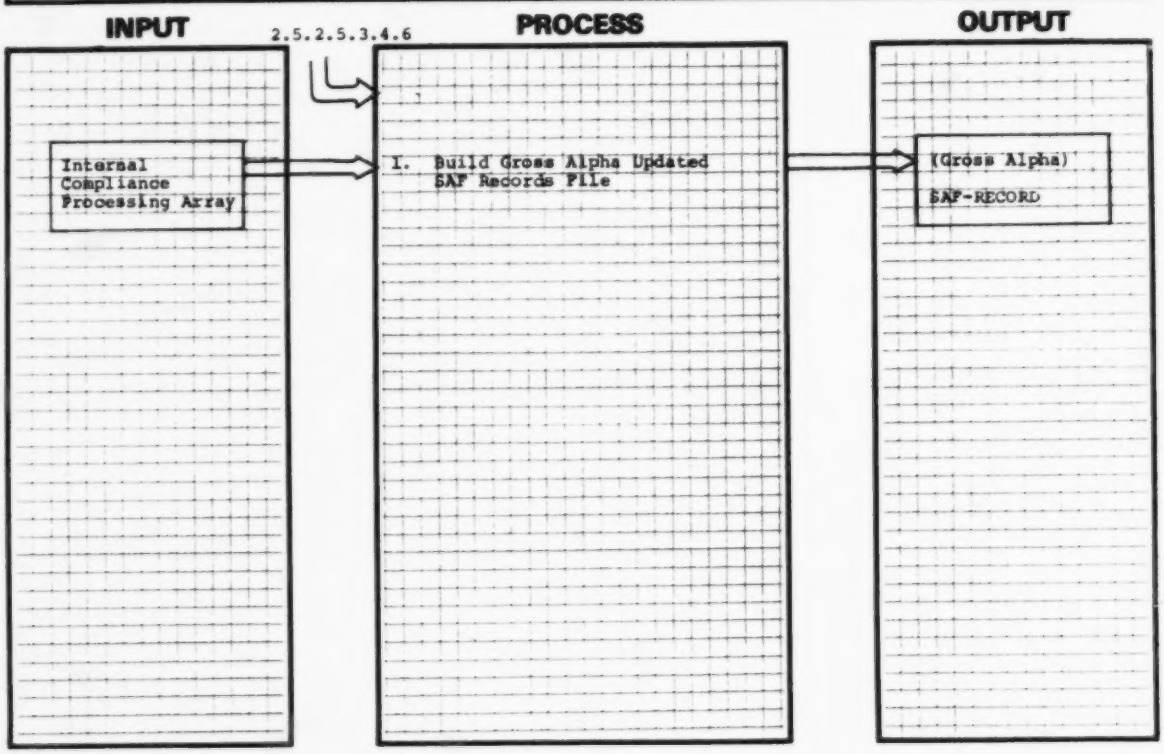
Diagram No.: 2.5.2.5.3.4.6 Description: Build Gross Alpha Remaining PSF Records File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Alpha Remaining Periodic Sample File (PSF) Records, PSF-RECORD, from those Gross Alpha Internal Compliance Processing Array Sample records flagged to be copied to the PSF. The PSF-RECORD is built by copying data from those fields in the Internal Compliance Processing Array sample record which corresponds with the PSF-RECORD.		WAQC035	252

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1
Diagram No.: 2.5.2.5.3.4.7 **Description:** Build Gross Alpha Updated SAF Records File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Alpha Updated Sample Analysis File (SAF) Records, SAF-RECORD, from those Gross Alpha Internal Compliance Processing Array (CPA) Sample records flagged to be copied to the SAF. The SAF-RECORD is built by two methods, depending on the source of the Internal CPA sample record: a. From the SAF: simply copy those fields in the Internal CPA sample record which corresponds with the SAF-RECORD. b. From the PSF: first copy those fields in the Internal CPA sample record which corresponds with the PSF-RECORD to the same fields in the SAF-RECORD; then generate the remainder of the SAF-RECORD fields internally, based on values and flags in the Internal CPA sample record.		WAQC035	252 254

Model State Information System
Training Program

Volume XII

PROGRAM DOCUMENTATION
Subsystem Descriptions

PART 2

Prepared for the

U.S. Environmental Protection Agency
Office of Water Supply
Washington, D.C.
under GSA Contract No. GS-05S-10458
Task Assignment OWS-77-01

by the

SouthWestern Ohio Regional Computer Center
Cincinnati, Ohio

July, 1977

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC036
DATE: April 10, 1977

I. OBJECTIVES:

The objective of this program is to edit the Gross Beta Records from the Contaminant Sample Analysis File (SAF) and the Periodic Sample File (PSF) for Maximum Contaminant Level (MCL) and Sampling violations. The MCL violations are used to build the Gross Beta MCL Violations File (VIF) which is passed to WAQC041. The Sampling Violations are used to produce the Gross Beta Sampling VIF which is passed to WAQC061. Both MCL and Sampling violations are used to produce the Gross Beta VIF Update Transactions File which is passed to WAQC120.

This program also builds the Gross Beta Remaining Periodic Sample File (PSF) and the Gross Beta Updated Sample Analysis File (SAF).

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Gross Beta Sample Analysis File	SAFI-HEDR-COMP-RECORD SAF-RECORD	WAQC.221 WAQC.254
2. Periodic Sample File	PSF-HEADER-RECORD PSF-RECORD	WAQC.251 WAQC.252
3. Public Water File	PWF-RECORD	PWSI.200
4. Compliance Status File	CSF-RECORD	WAQC.257
5. Regulations File	RGF-BETA-RECORD RGF-EMIT-RECORD	REGS.257 REGS.255
6. Laboratory Table	LBT-RECORD LBT-HDR-RECORD	WAQC.250 WAQC.256
7. Code Value Table	CVT-RECORD	MSIS.206

B. PROCESSING OPTIONS RECORD:

Not Applicable

III. OUTPUTS:

A. RECORD LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Compliance Status File	CSF-RECORD	WAQC.257
2. Gross Beta Remaining Periodic Sample File	PSF-RECORD	WAQC.252
3. Gross Beta Sample Analysis File	SAFI-HEDR-COMP-RECORD SAF-RECORD	WAQC.221 WAQC.254
4. Gross Beta MCL Violations File	VIFI-HEDR-REPT-RECORD VIFI-M-REPT-RECORD	WAQC.213 WAQC.216
5. Gross Beta Sampling Violations File	VIFI-HEDR-REPT-RECORD VIFI-S-REPT-RECORD	WAQC.213 WAQC.231
6. Gross Beta VIF Update Transactions File	VIFI-TR00-UPDT-RECORD VIFI-TR01-UPDT-RECORD VIFI-TR02-UPDT-RECORD	WAQC.223 WAQC.224 WAQC.225

B. RECORD LAYOUT:

NAME	EXHIBIT LAYOUT
1. Gross Beta Warnings Report	WAQC.326

C. TURNAROUND DOCUMENTS:

Not Applicable

IV. FUNCTIONS:

1. Verify the Gross Beta Sample Analysis File (SAF) header record by checking the date to determine if processing is to continue and what information is to be copied to the header records of the Gross Beta Updated SAF Record, MCL Violations, and Sampling Violations Files (VIF's).

2. Build the Gross Beta Internal Regulations Table from information extracted from the Regulations File (RGF).

3. Edit the Gross Beta Samples from the Periodic Sample File (PSF) and the Gross Beta SAF against information from the Compliance Status File (CSF), the Public Water File (PWF), and the Internal Regulations Tables built in step 2. The edits can result in building Gross Beta MCL Violations Records, Gross Beta Sampling Violations Records, Gross Beta Violations File (VIF) Update Transactions, Gross Beta Violations Warnings Report messages, an Updated CSF, Gross Beta Remaining PSF Records, and Gross Beta Updated SAF Records. The

Laboratory Table (LBT) is used to provide the Lab Name for the MCL VIF.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

B. Data Element Descriptions:

Not Applicable

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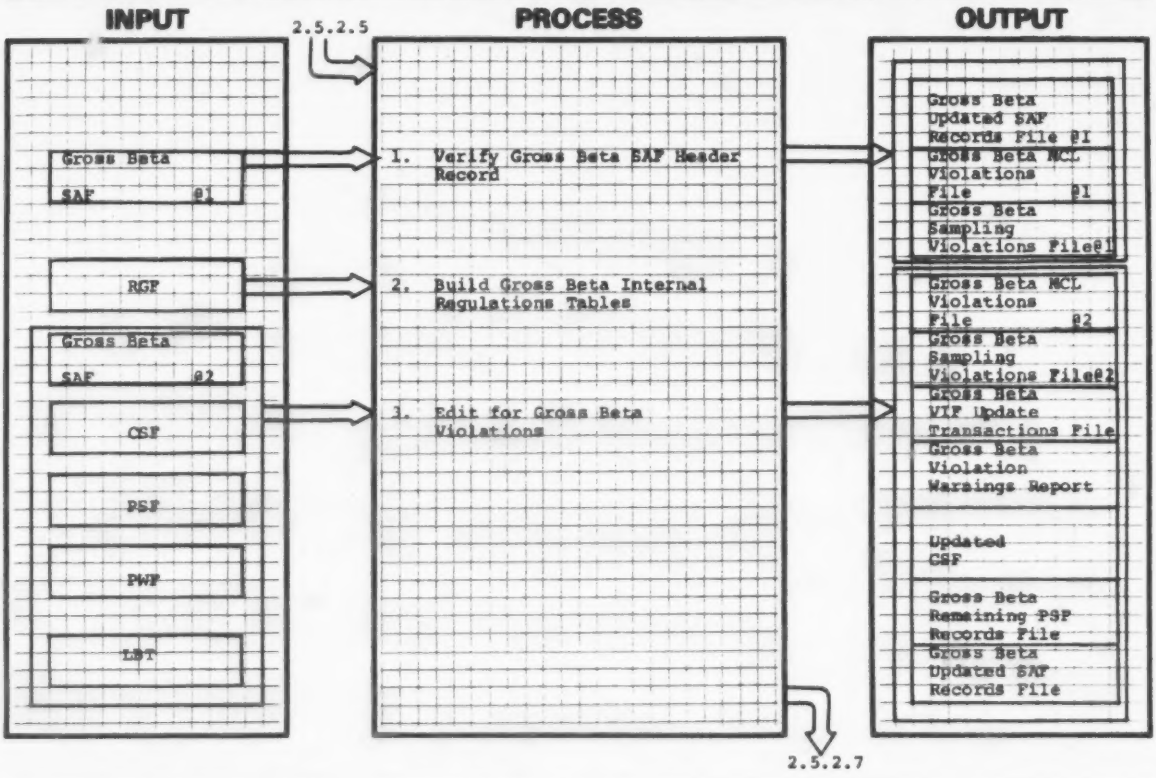
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.6 **Description:** Edit for Gross Beta Violations

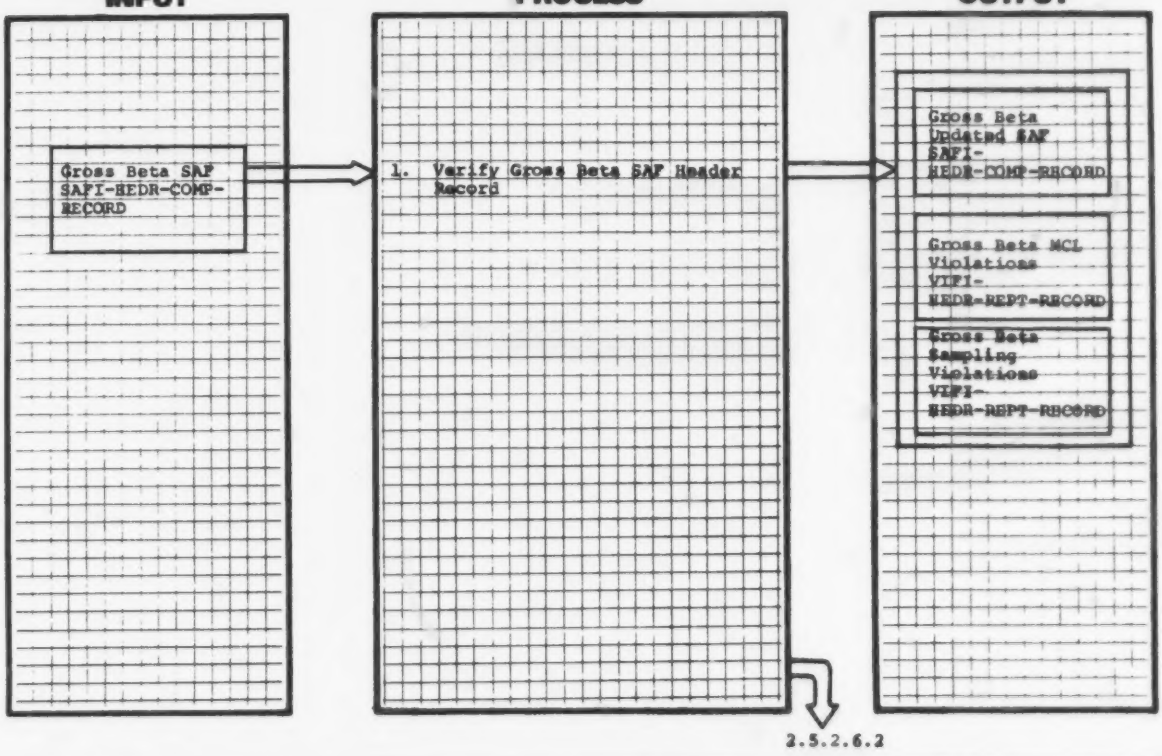


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record on the Gross Beta Sample Analysis File (SAF) by checking the date to determine if processing is to continue and what information is to be copied to the header records of the Gross Beta Updated SAF Records, MCL Violations, and Sampling Violations Files.	2.5.2.6.1	WAQC036	
2	Build the Gross Beta Internal Regulations Table from information extracted from the Regulations File (RGF) records.	2.5.2.6.2	WAQC036	
3	Edit the Gross Beta samples from the Gross Beta SAF and the Periodic Sample File (PSF) against information from the Compliance Status File (CSF), the Public Water File (PWF), and the Internal Regulations Tables built in Step 2. The edits can result in creating Violation records, Violation File (VIF) and PWF Update transaction records, Warnings Report messages, an updated CSF, and Remaining PSF and Updated SAF sample records. The Laboratory Table (LBT) is used to provide the LAB NAME for the MCL Violations File.	2.5.2.6.3	WAQC036	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.6.1 **Description:** Verify Gross Beta SAF Header Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Gross Beta Sample Analysis File (SAF) Header Record (SAFI-HEDR-COMP-RECORD) for 'zeros' in the processing date (SAFI-HC-DATE) and build the header records for the Gross Beta Updated SAF Records File (SAFI-HEDR-COMP-RECORD) for the Gross Beta MCL Violations File (VIFI-HEDR-REPT-RECORD) and for the Gross Beta Sampling Violations File (VIFI-HEDR-REPT-RECORD). If the processing date is 'zeros', the output file header records are built containing only the SAFI-HC-DATE value. This will terminate processing in those programs to which the header records are passed. If the processing date is not 'zeros', all the output file header records are built containing all the information in SAFI-HEDR-COMP-RECORD. This will permit normal processing in those programs to which the header records are passed. Note: The Gross Beta Updated SAF Records File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC038 (HIPO 2.5.3.1). The Gross Beta MCL Violations File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC041 (HIPO 2.5.4.1.4). The Gross Beta Sampling Violations File header record (SAFI-HEDR-COMP-RECORD) is passed to program WAQC061 (HIPO 2.5.4.2.4).		WAQC036	213 221

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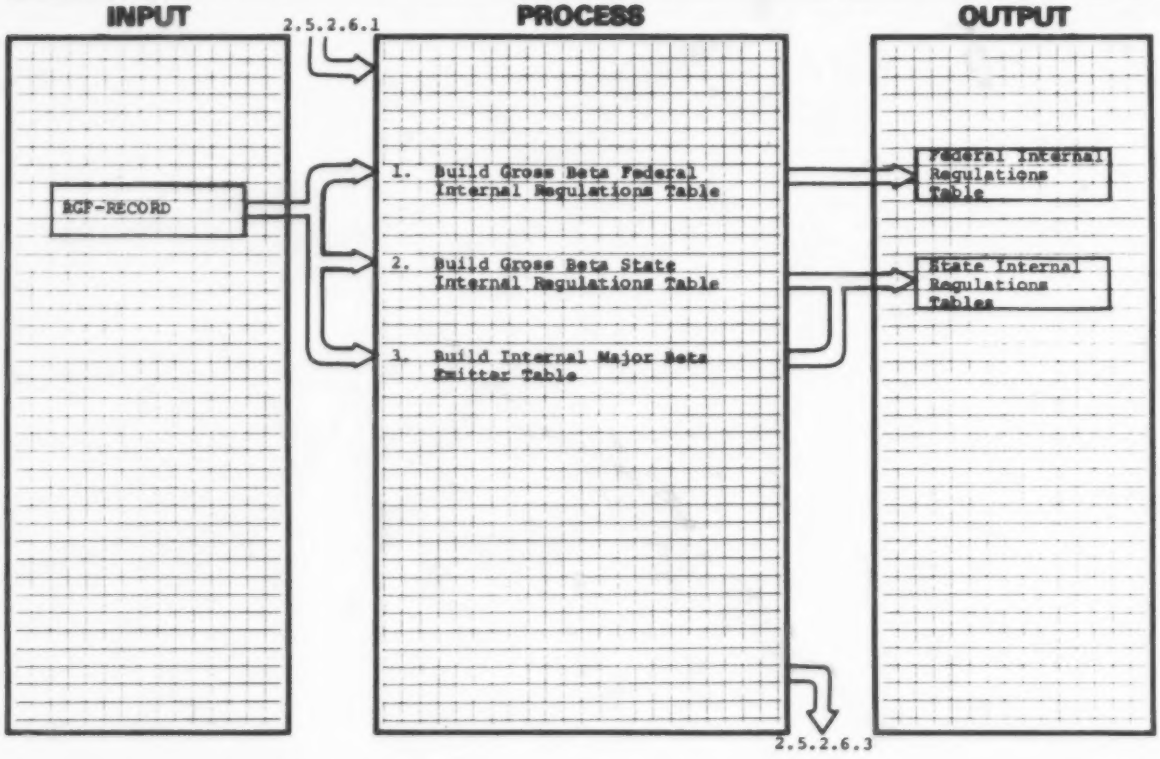
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.6.2 **Description:** Build Gross Beta Internal Regulations Tables

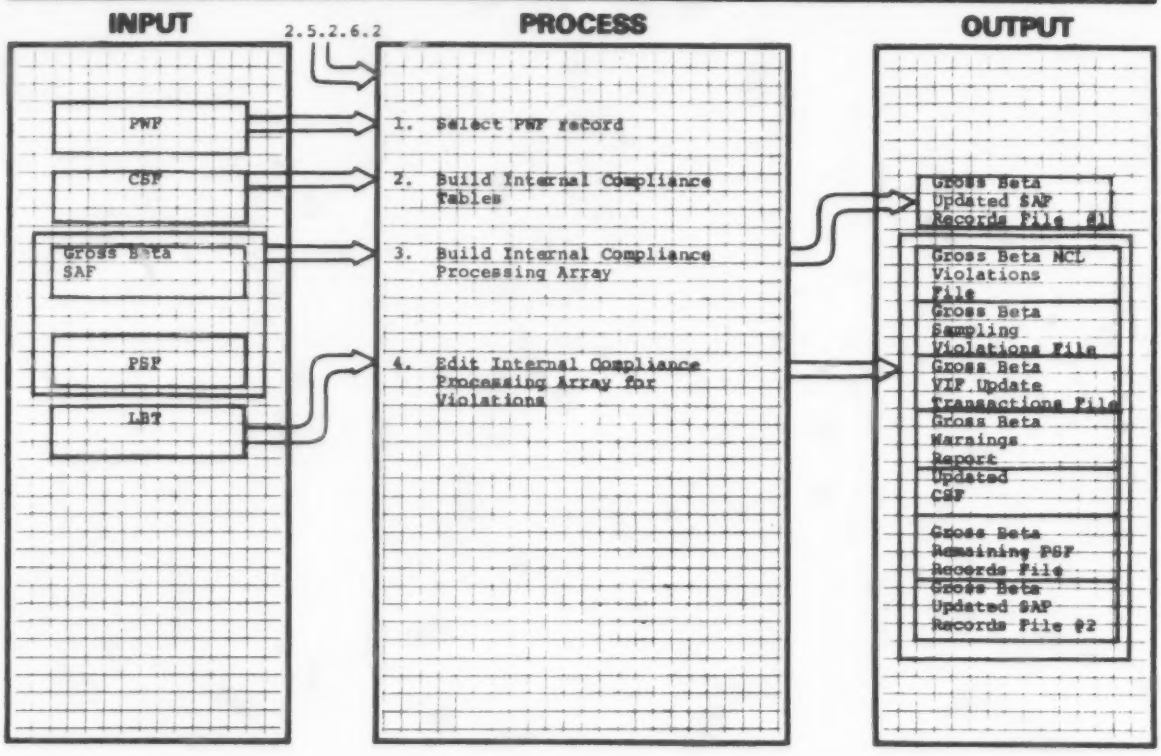


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Federal Internal Regulations Table by selecting information from the Federal record on the Regulations File (RGF) with a Contaminant ID of '4100' and storing internally. Reference Appendix C.6 for a detailed description of the fields used.		WAQC036	REGS. 257
2	Build the Gross Beta State Internal Regulations Table by selecting the information shown in Step 1 above from the State records on the RGF with a Contaminant ID of '4100'.		WAQC036	REGS. 257
3	Build the Internal Major Beta Emitter Table by selecting information from the State Record on the Regulations File (RGF) with Contaminant Group codes of '41', '42' or '43' (the first two positions of Contaminant ID) and Contaminant ID greater than '4100' and storing internally. Note: The Federal RGF records have the value of 'FP' in the REGU-LEVEL field, while the State RGF records have the value of 'SP' in the REGU-LEVEL field.		WAQC036	REGS. 257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.6.3 **Description:** Edit each Public Water System for Gross Beta Violations

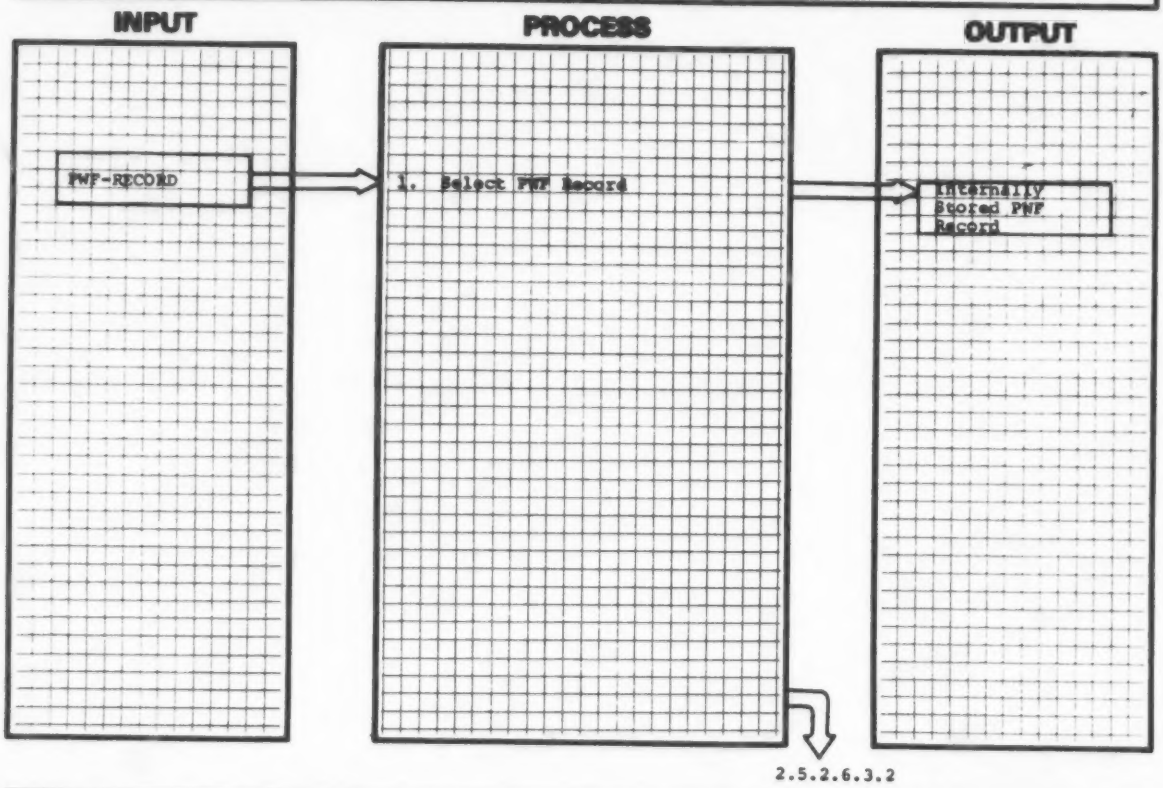


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) record and store internally.	2.5.2.6.3.1	WAQC036	
2	Build the Internal Compliance Tables of edit values from the internally stored PWF record from Step 1, the Compliance Status File (CSF), and the Internal Regulations Tables.	2.5.2.6.3.2	WAQC036	
3	Build the Internal Compliance Processing Array from sample records from the Gross Beta Sample Analysis File (SAF) and the Periodic Sample File (PSF) Gross Beta Sample records not to be used in processing violations are copied directly to the Gross Beta SAF.	2.5.2.6.3.3	WAQC036	
4	Edit the Internal Compliance Processing Array for violations against the Internal Compliance Tables built in Step 2. Violations result in the creation of Maximum Contaminant Level (MCL) or sampling violation records and the creation of Violations File (VIF) Update transactions. Certain situations will result in the production of Warnings Report messages instead of violation records or transactions. The cancellation of an MCL violation (when followup monitoring is no longer required) results in the creation of PWF Update transactions. Changes in the violation status of the Public Water System (PWS) result in updating of the CSF. Those PSF sample records not processed for violations are copied to the Remaining PSF, while all others, and the old SAF records, are copied to the Updated SAF. The Laboratory Table (LBT) is used to provide the Lab Name for the Violation records. Note: See Appendix A.6 for Compliance Overview	2.5.2.6.3.4	WAQC036	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 4/10/77 Page: 1 of 1

Diagram No.: 2.5.2.6.3.1 Description: Select PWF Record

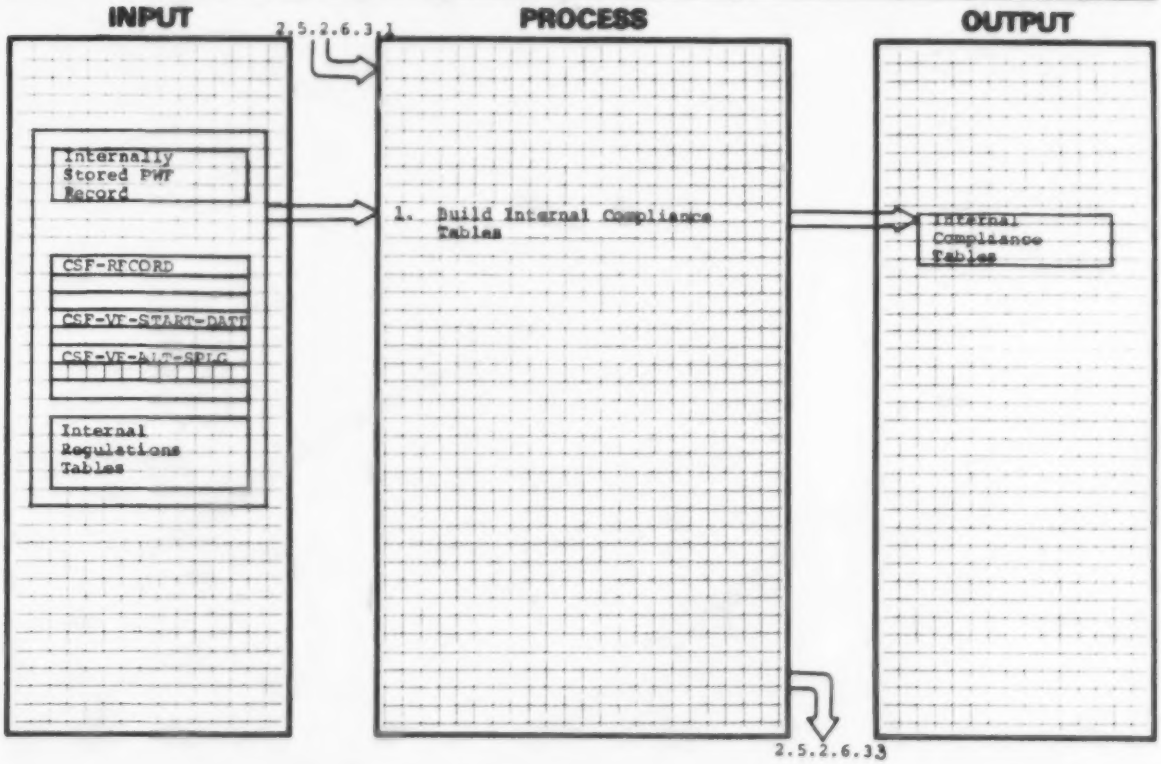


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) records needed for Gross Beta compliance and store internally. See Appendix B.6 for details.		WAQC036	PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.6.3.2 **Description:** Build Internal Compliance Tables

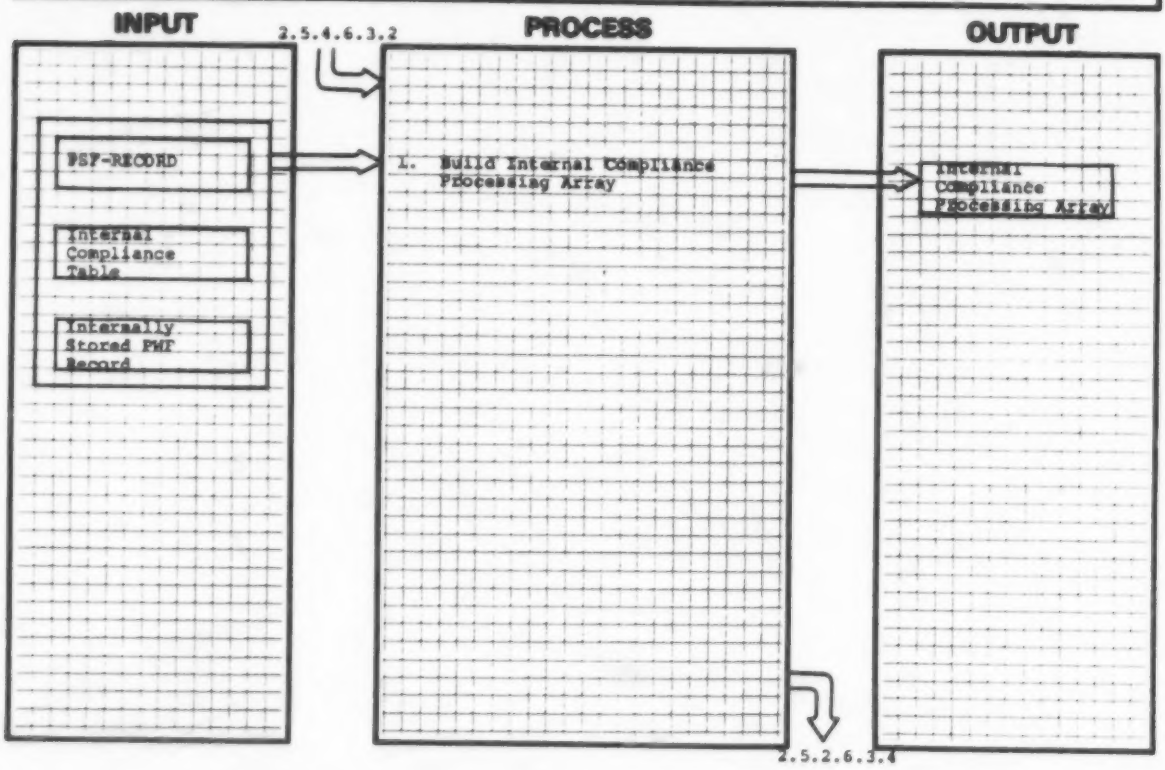


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Compliance Tables in the following manner: a. Information is copied from the Internal Regulations Tables into the Internal Compliance Tables. b. Information is added to the Internal Compliance Tables from the Internally Stored Public Water File (PWF) record as it pertains to the contaminant. c. The Internal Compliance Tables are modified by any Variance or Exemption information in the Internally Stored PWF record and the Compliance Status File (CSF) record for the Contaminant ID being processed. See Appendix C.6 for details		WAQC036	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.6.3.3 **Description:** Build Internal Compliance Processing Array

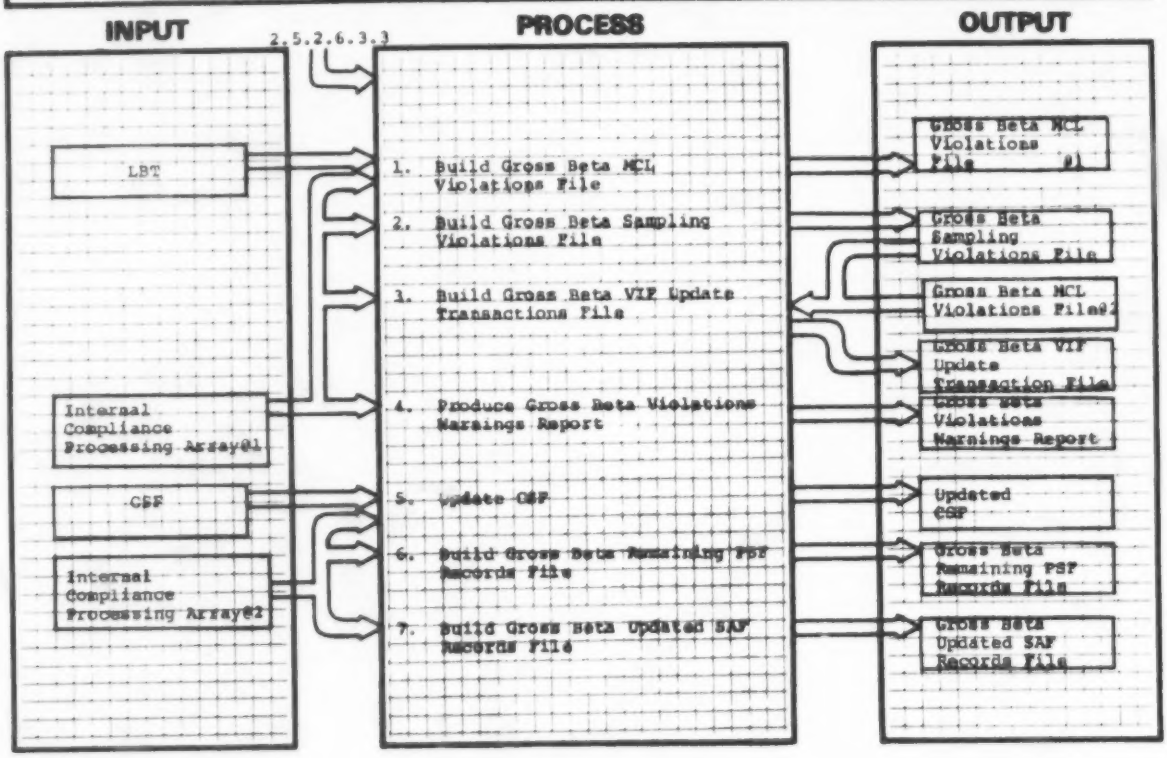


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Compliance Processing Array from those sample records selected from the Gross Beta Periodic Sample File (PSF) for use in processing Maximum Contaminant Level (MCL) and Sampling violations. Those PSF Gross Beta records not used in processing violations, as determined by information in the Internal Compliance Tables and the Internally Stored Public Water File (PWF) record, are copied to the Gross Beta Updated SAF Records file without violation processing. See Appendix D.6 for details.		WAQC036	251 254

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 2

Diagram No.: 2.5.2.6.3.4 **Description:** Edit Internal Compliance Processing Array for Violations


INPUT
2.5.2.6.3.3
PROCESS
OUTPUT
LBT
Internal Compliance Processing Array@1
CSF
Internal Compliance Processing Array@2
1. Build Gross Beta MCL Violations File
2. Build Gross Beta Sampling Violations File
3. Build Gross Beta VIF Update Transactions File
4. Produce Gross Beta Violations Warnings Report
5. Update CSF
6. Build Gross Beta Remaining PSF Records File
7. Build Gross Beta Updated SAF Records File
Gross Beta MCL Violations File @1
Gross Beta Sampling Violations File
Gross Beta MCL Violations File@2
Gross Beta VIF Update Transaction File
Gross Beta Violations Warnings Report
Updated CSF
Gross Beta Remaining PSF Records File
Gross Beta Updated SAF Records File

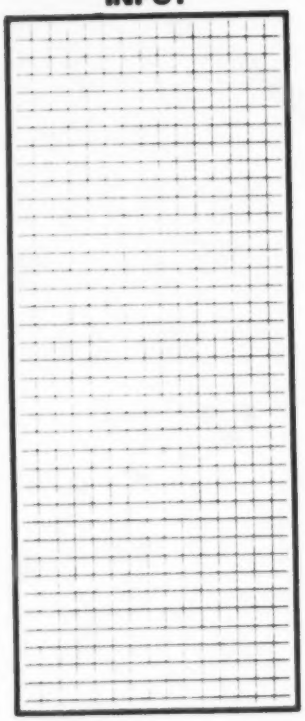
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The Internal Compliance Processing Array is edited against the Internal Compliance Tables for Maximum Contaminant Level (MCL) and Sampling Violations. The edits result in the creation of several records depending on the particular circumstances:			
1	Internal Compliance Processing Array (CPA) records in violation of MCL requirements cause Gross Beta MCL Violations File records to be built.	2.5.2.6.3.4.1	WAQC036	
2	Internal CPA missing records cause Gross Beta Sampling Violations File records to be built.	2.5.2.6.3.4.2	WAQC036	
3	Either MCL or Sampling violations also cause Gross Beta Violations File (VIF) Update transaction records to be built.	2.5.2.6.3.4.3	WAQC036	
4	Certain situations will produce messages in the Gross Beta Warnings Report instead of the violation records in Steps 1, 2, and 3.	2.5.2.6.3.4.4	WAQC036	
5	Changes in violation status of the Public Water System (PWS) cause the Compliance Status File (CSF) record to be updated.	2.5.2.6.3.4.5	WAQC036	
6	Those Periodic Sample File (PSF) Gross Beta records not used for processing violations are copied to the Gross Beta Remaining PSF Records File.	2.5.2.6.3.4.6	WAQC036	

MODEL STATE INFORMATION SYSTEM

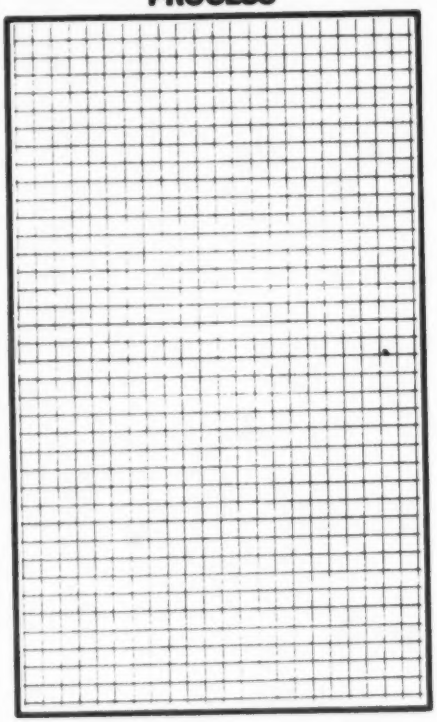
Diagram Type: Overview Subsystem: Water Quality Compliance Date: 4/10/77 Page: 2 of 2

Diagram No.: 2.5.2.6.3.4 Description: Edit Internal Compliance Processing Array for Violations

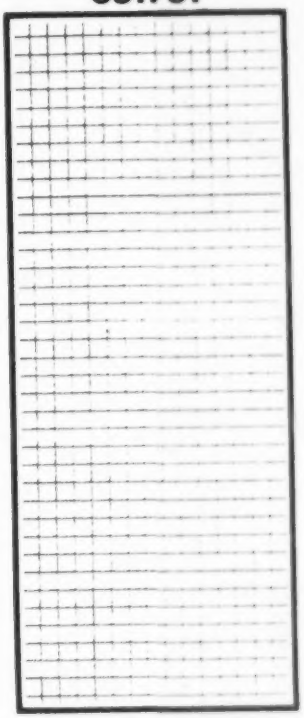
INPUT



PROCESS



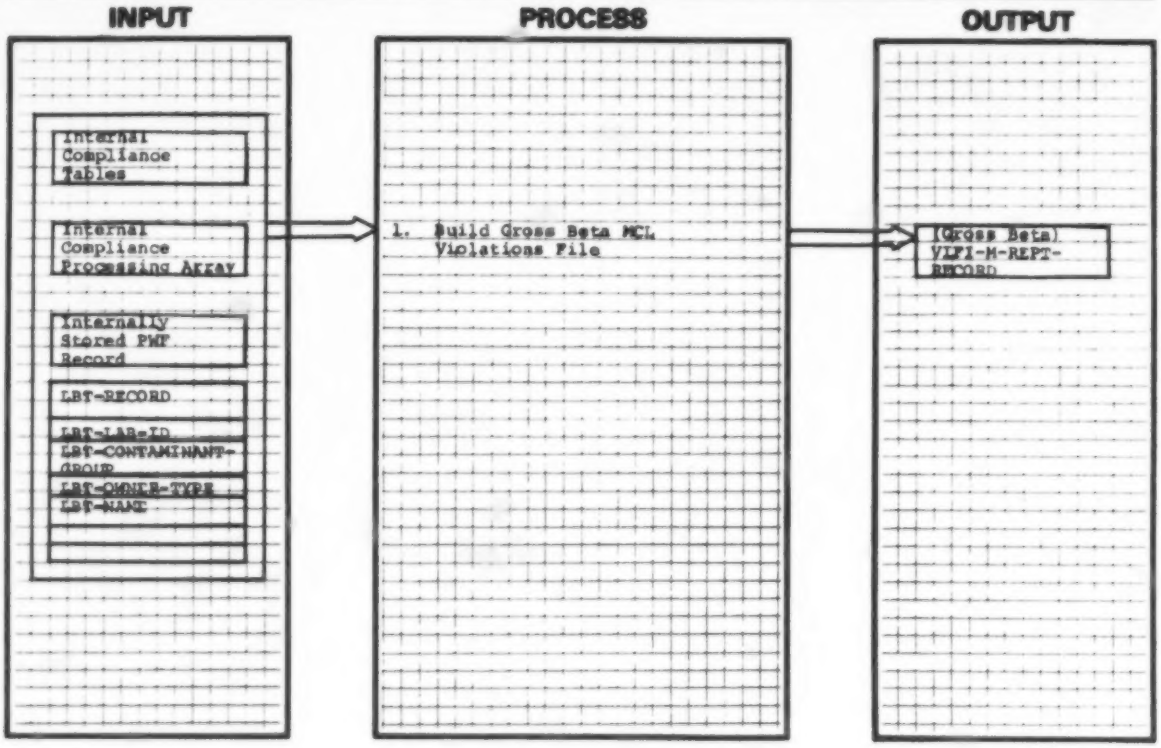
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
7	Those PSF records used for compliance and the Sample Analysis File (SAF) records stored in the Internal Compliance Processing Array are copied to the Gross Beta Updated SAF Records File. Note: See Appendix E.6 for details of violation processing.	2.5.2.6.3.4.7	WAQC036	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 2
Diagram No.: 2.5.2.6.3.4.1 **Description:** Build Gross Beta MCL Violations File

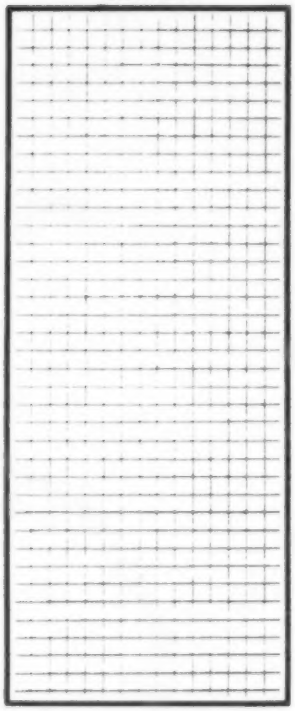


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Beta Maximum Contaminant Level (MCL) Violations File records, VIFI-M-REPT-RECORD, from the Gross Beta Internal Compliance Processing Array sample records flagged as being in violation of MCL requirements. The VIFI-M-REPORT-RECORDS are passed to program WAQC040 (HIPO 2.5.4.1.4) to be used to produce the Radiological MCL Violations Report. The VIFI-M-VIOLATION-TYPE field is set to '01'. The remainder of the fields in the VIFI-M-REPORT-RECORD, as listed below, are filled from the sources indicated: From the Internally Stored Public Water File (PWF) Record: VIFI-M-PWS-NAME VIFI-M-POPULATION VIFI-M-REGION VIFI-M-PWS-TYPE VIFI-M-SOURCE-CODE VIFI-M-DISTRICT From the Internal Compliance Tables: VIFI-M-MCL-VIOLATED VIFI-M-MCL-VIOL-DECIMALS Internally Generated: VIFI-M-REGULATION-LEVEL VIFI-M-VIOLATION-DATE VIFI-M-VIOLATION-DURATION		WAQC036	216 250 256

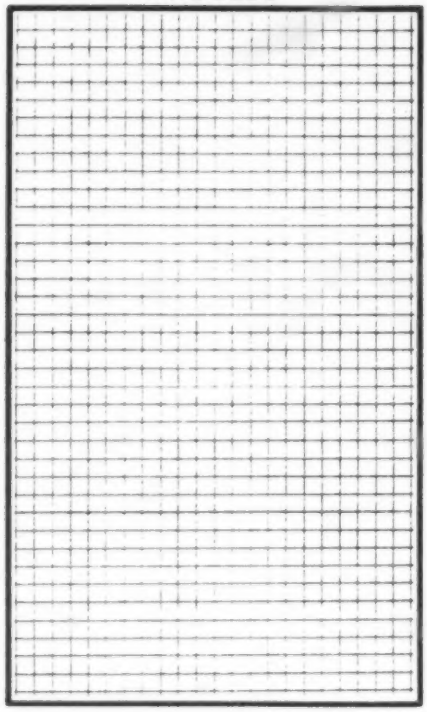
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 2 **of** 2
Diagram No.: 2.5.2.6.3.4.1 **Description:** Build Gross Beta MCL Violations File

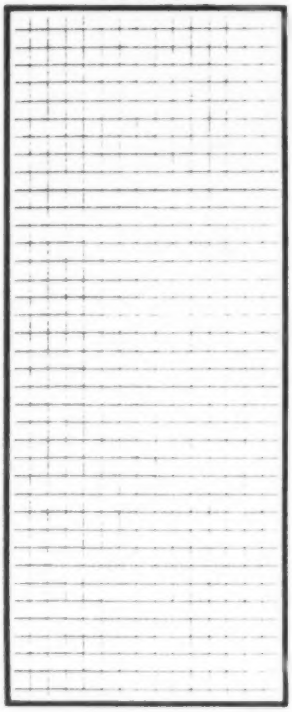
INPUT



PROCESS



OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER

From the Internal Compliance Array:

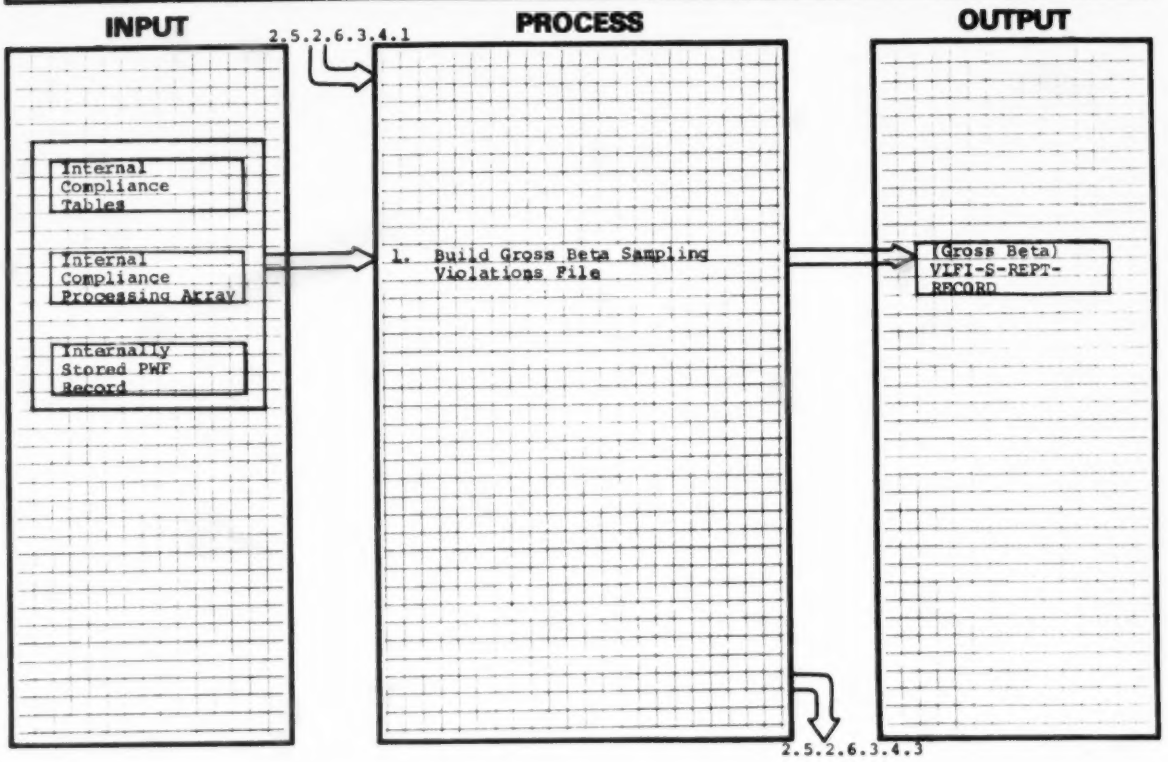
VIFI-M-PWS-ID
VIFI-M-CONTAMINANT-ID
VIFI-M-LAB-ID
VIFI-M-SAMPLE-DATE
VIFI-M-ANALYSIS-METHOD
VIFI-M-ANALYSIS-RESULT
VIFI-M-ANALYSIS-DECIMALS
VIFI-M-ANALYSIS-DATE
VIFI-M-SAMPLE-TYPE

From the Laboratory Table (LBT)

VIFI-M-LAB-NAME

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 2
Diagram No.: 2.5.2.6.3.4.2 **Description:** Build Gross Beta Sampling Violations File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Beta Sampling Violations File records, VIFI-S-REPT-RECORD, from information in the Gross Beta Internal Compliance Processing Array (CPA) indicating Regular Sampling violations. The VIFI-S-REPORT-RECORDS are passed to program WAQC060 (HIPO 2.5.4.2.4) to be used to produce the Radiological Sampling Violations Report. The VIFI-S-VIOLATION-TYPE field is set to '03' if the violation is of Regular Sampling requirements. The remainder of the fields in the VIFI-R-REPORT-RECORD, as listed below, are filled from the sources indicated: From the Internally Stored Public Water File (PWF) Record: VIFI-S-PWS-NAME VIFI-S-POPULATION VIFI-S-REGION VIFI-S-PWS-TYPE VIFI-S-SOURCE-CODE VIFI-S-DISTRICT From the Internal Compliance Tables: VIFI-S-SAMPLES-NUM-REQUIRED VIFI-S-SAMPLING-FREQ-VIOL Internally Generated: VIFI-S-REGULATION-LEVEL VIFI-S-VIOLATION-DURATION VIFI-S-VIOLATION-DATE VIFI-S-SAMPLES-NUM-TAKEN VIFI-S-SAMPLING-CUTOFF-DATE		WAQC036	231

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Diagram Type: Detail Subsystem: Water Quality Compliance Date: 4/10/77 Page: 2 of 2
Diagram No.: 2.5.2.6.3.4.2 Description: Build Gross Beta Sampling Violations File

INPUT

PROCESS

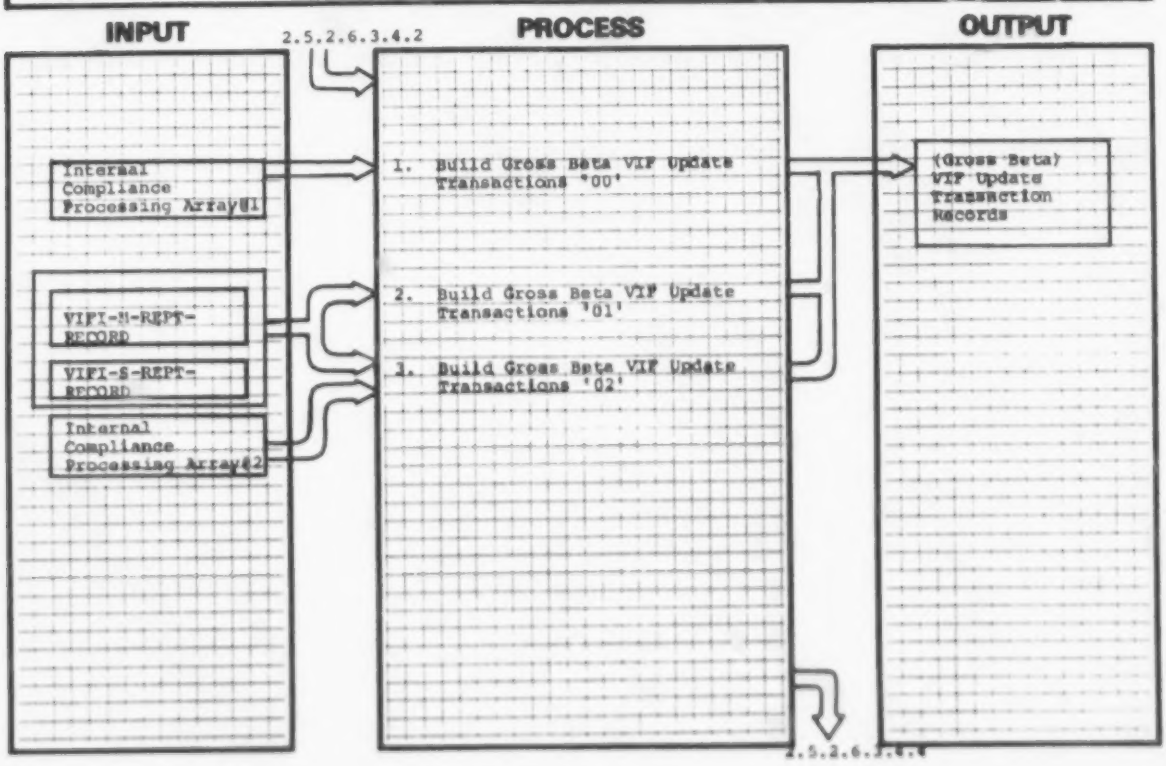
OUTPUT

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	From the Internal Compliance Array: VIFI-S-PWS-ID VIFI-S-SAMPLE-DATE VIFI-S-CONTAMINANT-ID VIFI-S-SAMPLE-TYPE Notes: (1) All other VIFI-S-REPT-RECORD fields not mentioned here, if alphabetic, are set to blank; if numeric, are set to zero. (2) When copying the value for VIFI-S-SAMPLE-CODE from the internal PWF record, check all available PWF-PLANT-SOURCE-CODE fields. If any are 'S' or 'P', then set the value of VIFI-S-SOURCE-CODE to 'S' (surface); otherwise, set the value to 'G' (ground).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.6.3.4.3 **Description:** Build Gross Beta VIF Update Transactions File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Beta Violations File (VIF) Update transaction record with code = '00' in positions 6-7.	2.5.2.3.4.3.1	WAQC036	
2	Build the Gross Beta VIF Update transaction record with code = '01' in positions 6-7.	2.5.2.3.4.3.2	WAQC036	
3	Build the Gross Beta VIF Update transaction record with code = '02' in positions 6-7.	2.5.2.3.4.3.3	WAQC036	
	Note: These transaction records are built only if violations were determined in HIPO 2.5.2.6.3.4.1 or 2.5.2.6.3.4.2. All three transactions are built for each Federal Maximum Contaminant Level (MCL) violation, each State MCL violation, each Federal Sampling Violation and each State Sampling violation.			

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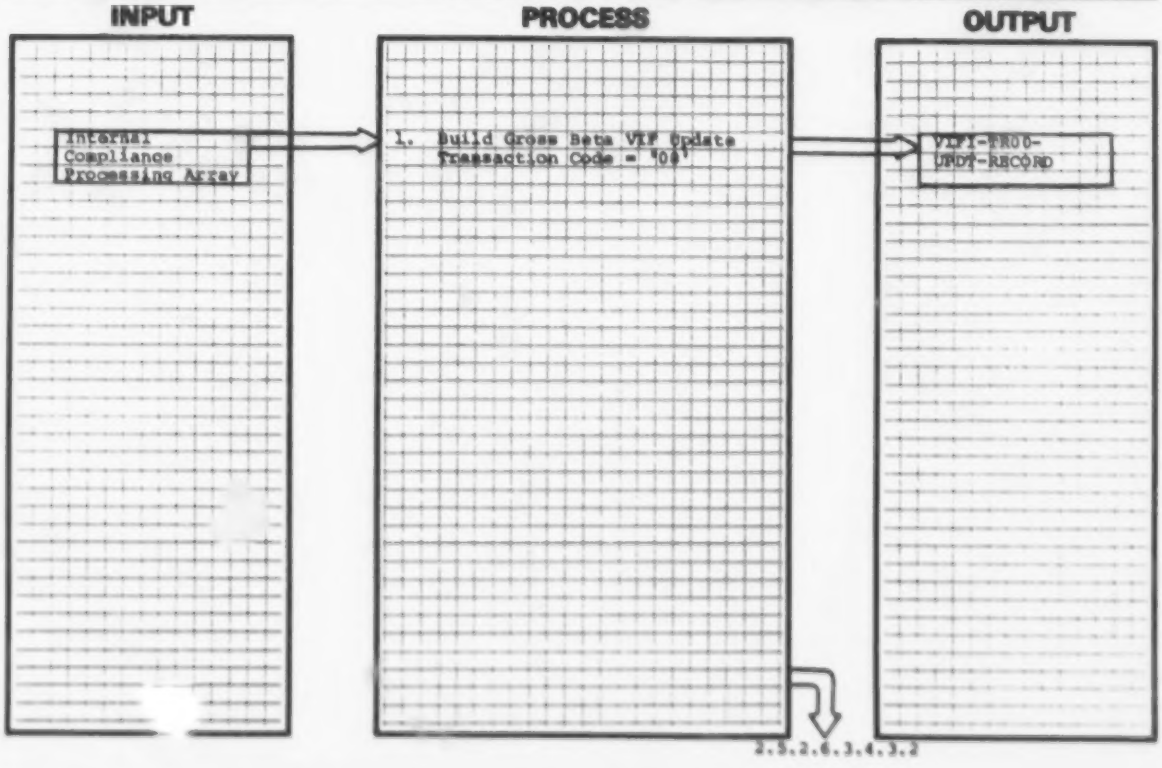
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1
Diagram No.: 2.5.2.6.3.4.3.1 **Description:** Build Gross Beta VIF Update Transaction - Code '00'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the Int[illegible] Compliance Processing Array has Maximum Contaminan[illegible] or Sampling violations, as determined in HIPO's [illegible].1 and 2.5.2.6.3.4.2, the Violations File (VIF) Update trans[illegible]on record to create a new VIF record is built as follows: VIFI-TR00-VIOLATION-ID is set to blank. VIFI-TR00-TR[illegible]ACTION-CODE is set to '00'. VIFI-TR00-C[illegible]-DELETE-FLAG is set to 'Y'.		WAQC036	223

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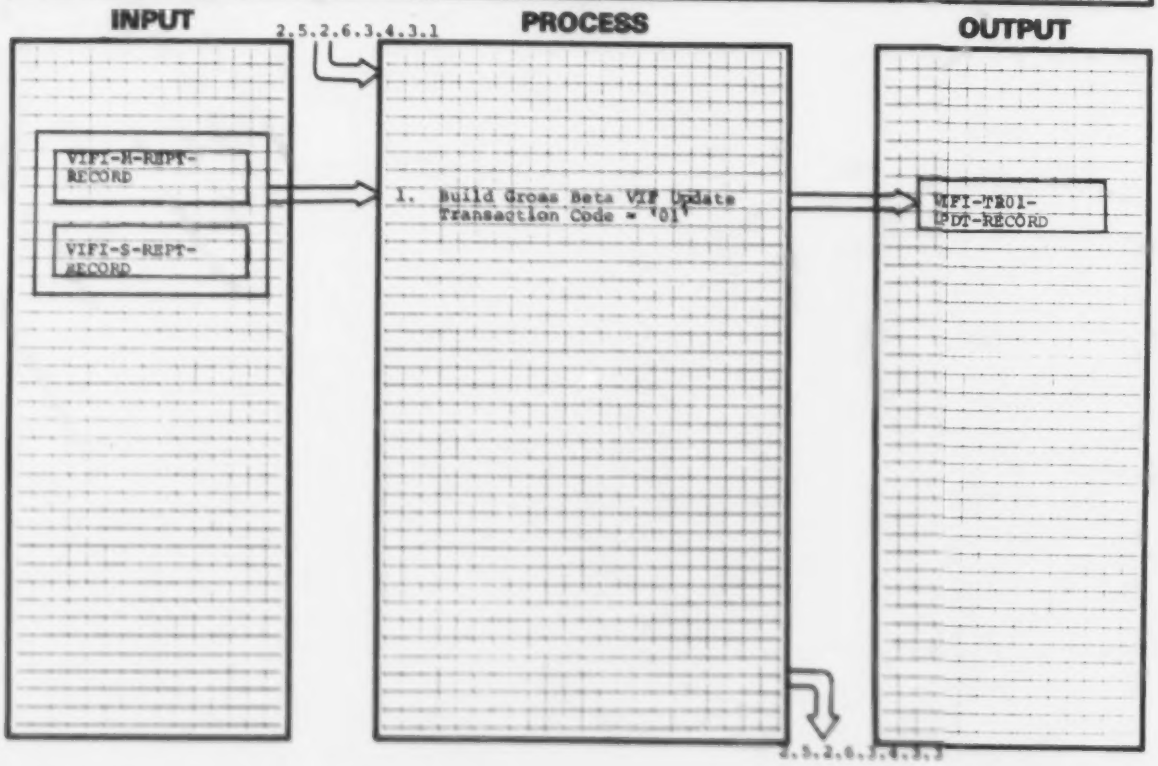
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.6.3.4.3.2 **Description:** Build Gross Beta VIF Update Transaction - Code '01'

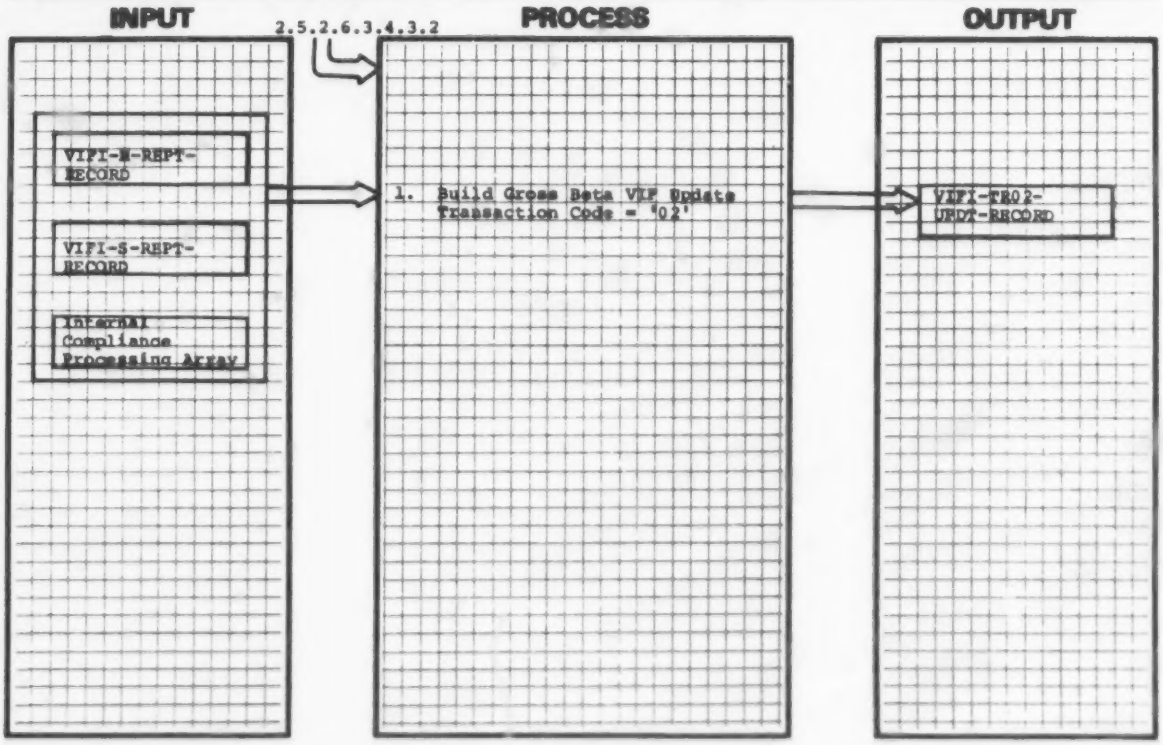


STEP	EXTENDED DESCRIPTION	REFERENCES		
		MSPO	PROGRAM	OTHER
1	If the transaction code = '00' record was built in MSPO 2.5.2.6.3.4.3.1, then build the Violations File (VIF) Update transaction code = '01' record to build the new VIF record as follows: The VIFI-TR01-VIOLATION-ID is set to blanks. The VIFI-TR01-TRANSACTION-CODE is set to '01'. For Maximum Contaminant Level (MCL) violations, the remaining fields of the VIFI-TR01-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-M-REPT-RECORD built in MSPO 2.5.2.6.3.4.1. For Sampling violations, the remaining fields of the VIFI-TR01-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-S-REPT-RECORD built in MSPO 2.5.2.6.3.4.2.		WAQC036	216 224 231

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.6.3.4.3.3 **Description:** Build Gross Beta VIF Update Transaction - Code '02'

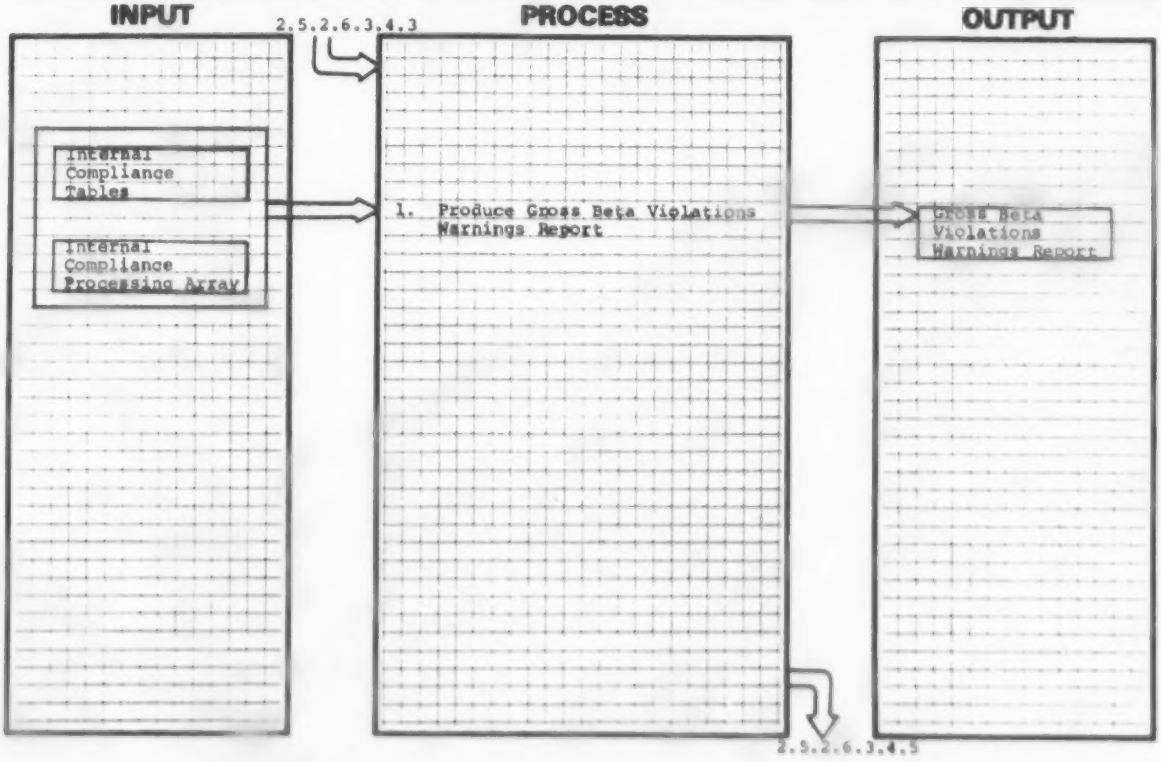


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the transaction code = '00' record was built in HIPO 2.5.2.6.3.4.3.1, then build the Violations File (VIF) Update transaction code = '02' record to build the new VIF record as follows: The VIFI-TR02-VIOLATION-ID is set to blanks. The VIFI-TR02-TRANSACTION-CODE is set to '0 ' For Maximum Contaminant Level (MCL) violations, the remaining fields of the VIFI-TR02-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-M-REPT-RECORD built in HIPO 2.5.2.6.3.4.1. For Sampling violations, the remaining fields of the VIFI-TR02-UPDT-RECORD are filled by the value of the corresponding field in the VIFI-S-REPT-RECORD built in HIPO 2.5.2.6.3.4.2. The VIFI-TR02-SAMPLE-KEY field is filled from the PSF-SAMPLE-KEY in the Internal Compliance Processing Array record.		WAQC036	216 225 231

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.6.3.4.4 **Description:** Produce Gross Beta Violations Warnings Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Due to enactment cancellation of a sampling Variance or Exemption as shown in the Internal Compliance Tables, the Public Water System (PWS) is considered to be 'in transition' either into, in the case of enactment, or out of, in the case of cancellation, a Variance and Exemption sampling period. In either case, the contaminants of the PWS are checked for Sampling Violations as in HIPO 2.5.2.6.3.4.2; but instead of Sampling Violations, messages are produced on the Gross Beta Warnings Report. If Regular Sampling violations are detected, the message is 'No Rglr Spls taken within the period XX/XX/XX to XX/XX/XX'. If Check Sampling violations are detected, the message is 'No Check Spls taken within the period XX/XX/XX to XX/XX/XX'.		WAQC036	326

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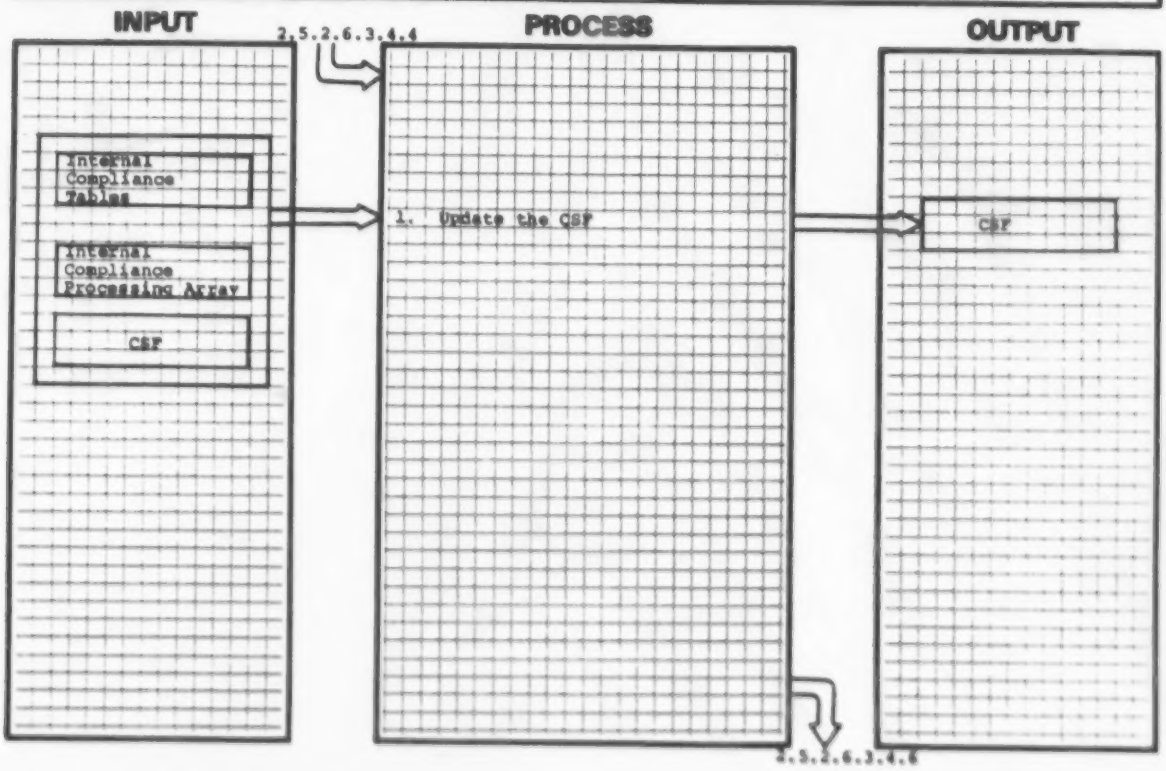
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1
Diagram No.: 2.5.2.6.3.4.5 **Description:** Update CSF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		INPO	PROGRAM	OTHER
1	The Compliance Status File (CSF) is updated for each contaminant wherever the following changes occur: a. Federal Regular Sampling Period changes b. State Regular Sampling Period changes c. Federal Check Sampling Period changes d. State Check Sampling Period changes e. Maximum Contaminant Level (MCL) or Sampling Variance or Exemption enactment, change, or cancellation. See Appendix C.6 for details.		WAQC036	257

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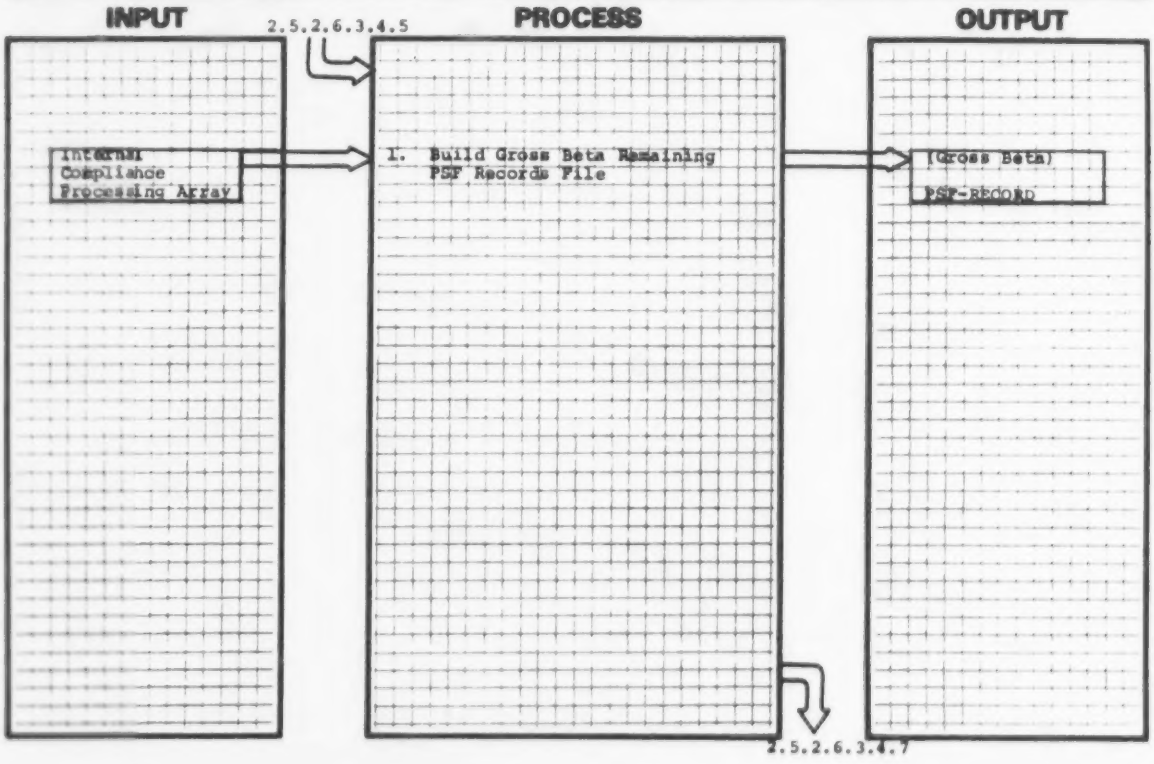
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 **of** 1

Diagram No.: 2.5.2.6.3.4.6 **Description:** Build Gross Beta Remaining PSF Records File

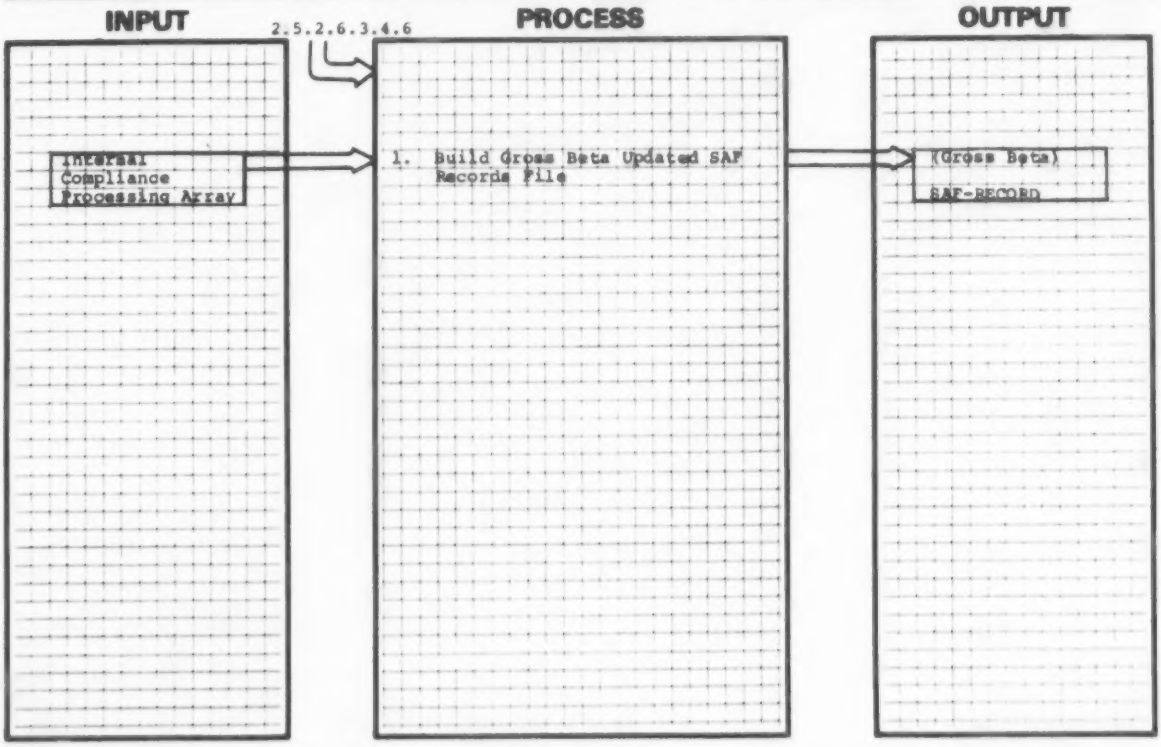


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Beta Remaining Periodic Sample File (PSF) Records, PSF-RECORD, from those Gross Beta Compliance Processing Array Sample records flagged to be copied to the PSF. The PSF-RECORD is built by copying data from those fields in the Internal Compliance Processing Array sample record which corresponds with the PSF-RECORD.		WAQC036	252

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 4/10/77 **Page:** 1 of 1

Diagram No.: 2.5.2.6.3.4.7 **Description:** Build Gross Beta Updated SAF Records File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Gross Beta Updated Sample Analysis File (SAF) Records, SAF-RECORD, from those Gross Beta Internal Compliance Processing Array (CPA) sample records flagged to be copied to the SAF. The SAF-RECORD is built by two methods, depending on the source of the Internal Compliance Processing Array sample record: a. From the SAF: simply copy those fields in the Internal CPA sample record which correspond with the SAF-RECORD. b. From the PSF: first copy those fields in the Internal CPA sample record which corresponds with the PSF-RECORD to the same fields in the SAF-RECORD; then, generate the remainder of the SAF-RECORD fields internally, based on values and flags in the Internal CPA sample record.		WAQC036	252 254

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC037
DATE: March 8, 1977

I. OBJECTIVES:

The objective of this program is to edit the Public Water Systems (PWS) for Operations Report Violations. These violations are used to build the Operations Report Violations File (VIF) which is passed to module WAQC090 and the Operations Report VIF Update Transaction File which is passed to module WAQC120.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Compliance Date File	SAFI-HFDR-COMP-RECORD	WAQC.221
2.	Public Water File	PWF-RECORD	PWSI.200

B. Processing Options Record:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Operations Report Violations File	VIFI-HEDR-REPT-RECORD	WAQC.213
		VIFI-R-REPT-RECORD	WAQC.232
2.	Operations Report Violations File Update Transaction File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225

B. Report Layouts:

Not Applicable

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify the date record on the Compliance Date File by checking the current date and operations report field. If the current date is equal to zero or the operations report field is blank, processing will be terminated. In addition, a header record is built for the Operations Report Violations File (VIF) and an Operations Report date period is built from the operations report field from the date record.

2. Edit each Public Water System for compliance. If a Public Water System was to submit an Operations Report for the specified Operations Report date period and did not, as indicated by the proper field on the Public Water File (PWF) record, a violation is assigned and records are written to the Operations Report Violations File and the Operations Report VIF Update Transactions File.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

B. Data Element Descriptions:

Not Applicable

PROGRAM WAQC037
OPERATIONS REPORT VIOLATIONS

Program Logic

1. Read Date Record (SAFI-HEDR-COMP-RECORD, WAQC,221) built by program WAQC025, which is used to pass processing options.

2. Build the header record of the Operations Report Violations File (VIFI-HEDR-REPT-RECORD, WAQC.213) as follows:

   a. Use 'LOW-VALUES' for (VIFI-H-R-) ID
   b. Use current date from date record for DATE
   c. Use zeros for COMPL-CYCLE, FROM-DATE, UNTIL-DATE

   Do not write the record yet.

3. Verify the current date and the operations report date. If the current date (SAFI-HC-DATE) = "000000" or if the operations report date (SAFI-HC-OPERATION-REPORT) is equal to blanks, processing is to be terminated. Write the header record constructed in (2), close the Operations Report Violations File and terminate processing.

   If processing is to continue, compute new FROM-DATE and UNTIL-DATE as follows:

   a. Compliance month and compliance year were supplied on the date record as SAFI-HC-OPERATION-REPORT in the format MMYY. Split into separate month and year and move into the corresponding areas of FROM-DATE and UNTIL-DATE.

   b. Move "1" into the day area of FROM-DATE. Move the last day of the month into the day area of UNTIL-DATE (i.e. 31 for January, 30 for April, 31 for May, etc. Be sure if COMPL-YEAR is a leap year, use 29 days for February.)

   c. Convert FROM-DATE and UNTIL-DATE to Julian for use in compliance determination.

   Now write the header record for the Operations Report Violations.

4. Read a Public Water File (PWF) Record (PWSI.200). If PWF-PLANT-ACTIVITY = "1" (deactivated) or PWF-STATE-REPORT-REQUIRED = "N" go on to next PWF Record.

5. If the PWF-STATE-REPORT-REQUIRED = "Y" check the PWF-STATE-LAST-REPORT-DATE. If it is before the period defined by the Julian FROM-DATE and UNTIL-DATE, the PWS is in violation. If it is within or beyond the period, go on to the next PWF Record.

6. If the Public Water System (PWS) is in violation, two files need to be added to as follows:

   a. Build a single VIFI-R-REPORT-RECORD (WAQC.232) to be included in the Operation Report Violations File (VIF). Obtain all information directly from the corresponding fields on the Public Water File (PWF) Record except for source code and time since last report which are obtained as follows:

      (1) Source code is contained in the variable portion of the PWF Record. Each of the existing source codes is examined. If any of them equal "S" or "P", use "S" for VIFI-R-SOURCE-CODE; else use "G" for VIFI-R-SOURCE-CODE.

      (2) Time since last report (in months) is computed using the date of the last report and the current date. This is done by subtracting the last report month from the current month. If years are spanned, 12 times the number of years spanned is added to the total.

      Example 1: Current Date = 10/1/76
      Last Report Date = 6/1/76
      Time Since = 10 - 6 = 4 months

      Example 2: Current Date = 2/1/77
      Last Report Date = 10/1/76
      Time Since = 2 - 10 + 12 = 4 months

   b. Build a set of VIF Update Transactions (WAQC.223, 224, 225). The following fields, by transaction, are filled in - the remainder are blank. Unless otherwise noted, obtain information from the corresponding fields of the PWF Record.

      (1) Transaction "00"
      VIFI-TR00-TRANSACTION-CODE = "00"
      -CREATE-DELETE-FLAG = "Y"

      (2) Transaction "01"
      VIFI-TR01-TRANSACTION-CODE = "01"
      -PWS-ID
      -REGULATION-LEVEL = "PP"

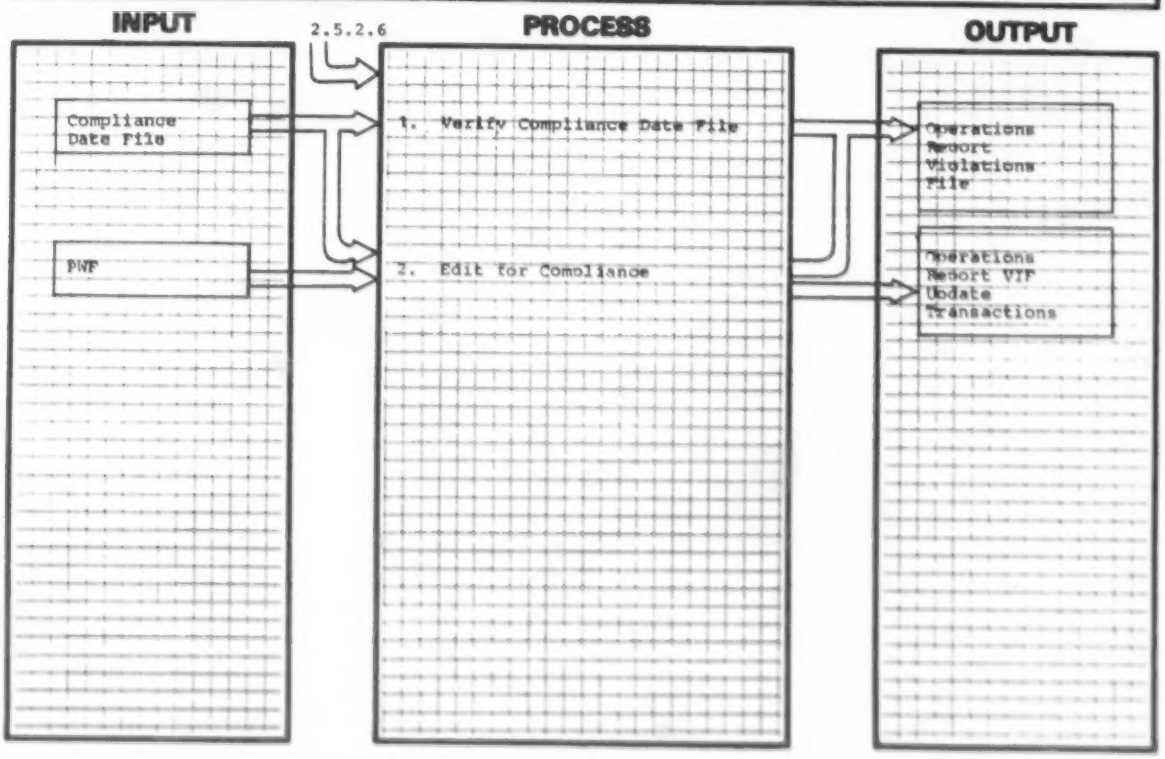
      (3) Transaction "02"
      VIFI-TR02-TRANSACTION-CODE = "02"
      -VIOLATION-TYPE = "10"
      -VIOLATION DATE = current date
      -DATE-LAST-REPORT
      -TIME-SINCE-LAST-REPORT (from calculation in 6a)

7. Continue processing until end of file on the PWF. Then close all files and terminate processing.

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-8-77 **Page:** 1 of 1

Diagram No.: 2.5.2.7 **Description:** Edit for Operations Report Violations



STEP	EXTENDED DESCRIPTION	REFERENCES		
		INPUT	PROGRAM	OTHER
1	Verify the date record from the Compliance Date File. This file was built by module WAQC025 and is used to pass Processing Options to the Compliance Determination modules. If the current date = '000000' or if the operations report field is blank, processing will be terminated. In addition, the header record for the Operations Report Compliance Violations File is produced.		WAQC037	221 213
2	Edit each Public Water System (PWS) for compliance if processing was to continue. This is done by checking the proper fields in the Public Water File (PWF) record. If a PWS is in violation then:		WAQC037	PWS1, 200 223 224 225 232
	a. An Operations Report Compliance Violations File record is built,			
	b. A set of three Operations Report Violations File (ORV) update transactions are built.			

NARRATIVE

SUSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC038
DATE: February 24, 1977

I. OBJECTIVES:

The objectives of this program are to merge the various records files from the compliance programs (WAQC031-WAQC038), to build the new permanent files (Sample Analysis File (SAF) and Periodic Sample File (PSF)), to build the Update Transaction Files (Violations (VIF) File Update and Public Water File (PWF) Update), and to produce the Completion Report.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Sorted Sample Analysis File (SAF)	SAFI-HEDR-COMP-RECORD	WAQC.221
		SAF-RECORD	WAQC.254
2.	Turbidity Remaining Periodic Sample File (PSF)	PSF-RECORD	WAQC.252
		PSF-HEADER-RECORD	WAQC.251
3.	Inorganic Chemical Remaining Periodic Sample File (PSF)	PSF-RECORD	WAQC.252
4.	Organic Chemical Remaining Periodic Sample File (PSF)	PSF-RECORD	WAQC.252
5.	Bacteriological Remaining Periodic Sample File (PSF)	PSF-RECORD	WAQC.252
6.	Gross Alpha Remaining Periodic Sample File (PSF)	PSF-RECORD	WAQC.252
7.	Gross Beta Remaining Periodic Sample File (PSF)	PSF-RECORD	WAQC.252

8.	Turbidity Violations File Update Transaction File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225
9.	Inorganic Chemical Violations File (VIF) Update Transaction File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225
10.	Organic Chemical Violations File (VIF) Update Transaction File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225
11.	Bacteriological Violations File (VIF) Update Transaction File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225
12.	Gross Alpha Violations File (VIF) Update Transaction File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225
13.	Gross Beta Violations File (VIF) Update Transaction File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225
14.	Operation Report Violations File (VIF) Update Transaction File	VIFI-TR00-UPDT-RECORD	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.225

15.	Inorganic Chemical Public Water File (PWF) Update Transaction File	PWFI-TRAN-10	PWSI.223
16.	Organic Chemical Public Water File (PWF) Update Transaction File	PWSI-TRAN-10	PWSI.223

B. Processing Options Record:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	New Sample Analysis File (SAF)	SAF-RECORD	WAQC.254
2.	New Periodic Sample File (PSF)	PSF-HEADER-RECORD PSF-RECORD	WAQC.251 WAQC.252
3.	Violations File Compliance Input Transaction File	VIFI-TR00-UPDT-RECORD VIFI-TR01-UPDT-RECORD VIFI-TR02-UPDT-RECORD	WAQC.223 WAQC.224 WAQC.225
4.	PWF Input Transaction File	PWSI-TRAN-10-RECORD	PWSI.223

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Completion Report	WAQC.327

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify the six (6) Sample Analysis Files (SAF) header records on the sorted SAF by checking the date fields. If all the header records have valid dates, processing continues; if any of the records have "zero" dates, a message will be produced on the Completion Report and processing will terminate.

2. Build the new SAF by stripping off the header records from the sorted SAF and assigning Sample Keys to the new SAF records. Also produce the Completion Report SAF statistics.

3. Build the New Periodic Sample File (PSF) by merging the six (6) Contaminant Remaining PSF Records Files into one file and sorting that file into the proper sequence. Also produce the Completion Report PSF statistics.

4. Build the Violations File (VIF) Compliance Input Transactions File by copying the six (6) Contaminant VIF Update Transactions Files and the Operations Report VIF Update Transactions File into one file. Also produce the Completion Report VIF Input Transactions statistics.

5. Build the Public Water File (PWF) Input Transaction File by copying the two (2) Contaminant PWF Update Transactions Files into one file. Also produce the Completion Report PWF Input Transactions statistics.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

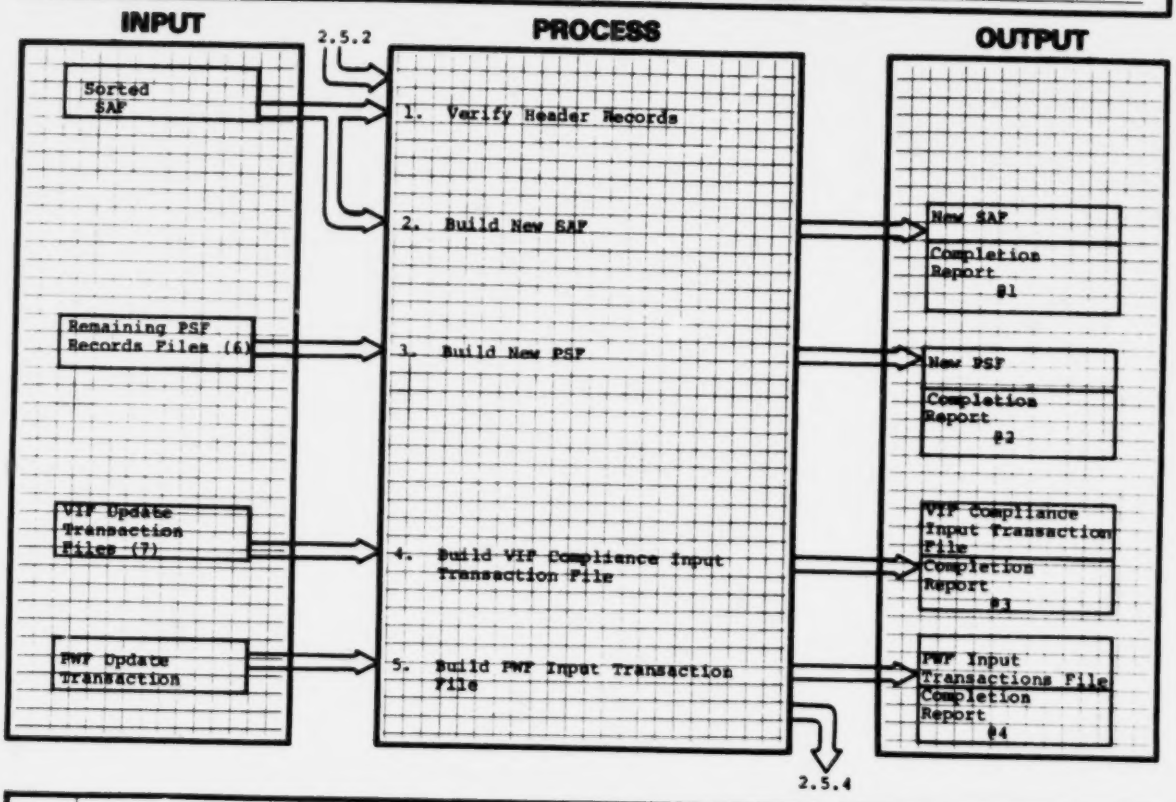
Not Applicable

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-8-77 **Page:** 1 of 1
Diagram No.: 2.5.3 **Description:** Merge Compliance Files

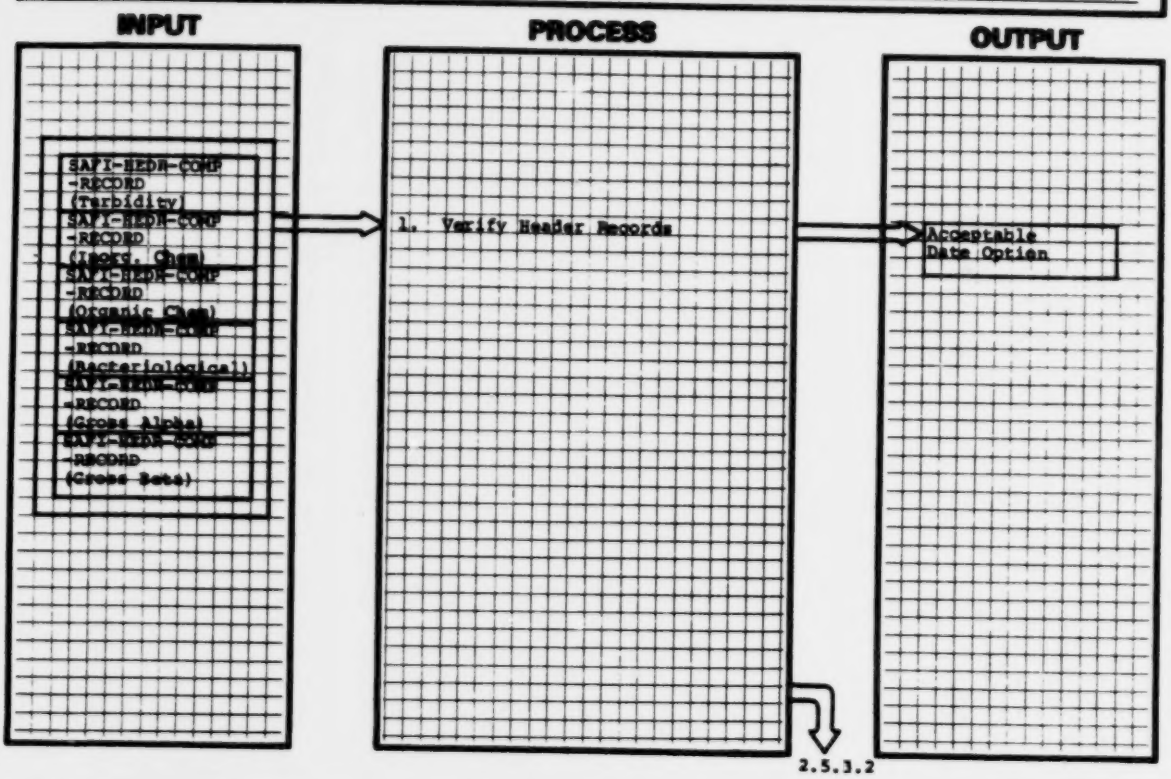


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the six Updated Sample Analysis File (SAF) Header records to determine if the merges should be executed. If so, execute steps 2 through 5; if not, processing is terminated.	2.5.3.1	WAQC038	
2	Build the new SAF by removing the header records and assigning sample keys to those sorted SAF records without sample keys. Also produce the Completion Report with SAF statistics.	2.5.3.2	WAQC038	
3	Build the new Periodic Sample File (PSF) by merging the six contaminant remaining PSF's into one file and sorting that file into the proper PSF sequence. Also produce the Completion Report PSF statistics.	2.5.3.3	WAQC038	
4	Build the Violations File (VIF) Compliance Input Transaction File by copying the six contaminant VIF Update Transaction Files and the Operations Report VIF Update Transactions File into one file. Also produce the Completion Report VIF input transaction statistics.	2.5.3.4	WAQC038	
5	Build the Public Water File (PWF) Input Transactions File by copying the two PWF Update Transaction Files into one file. Also produce the Completion Report PWF input transaction statistics.	2.5.3.5	WAQC038	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-8-77 Page: 1 of 1

Diagram No.: 2.5.3.1 Description: Verify Header Records

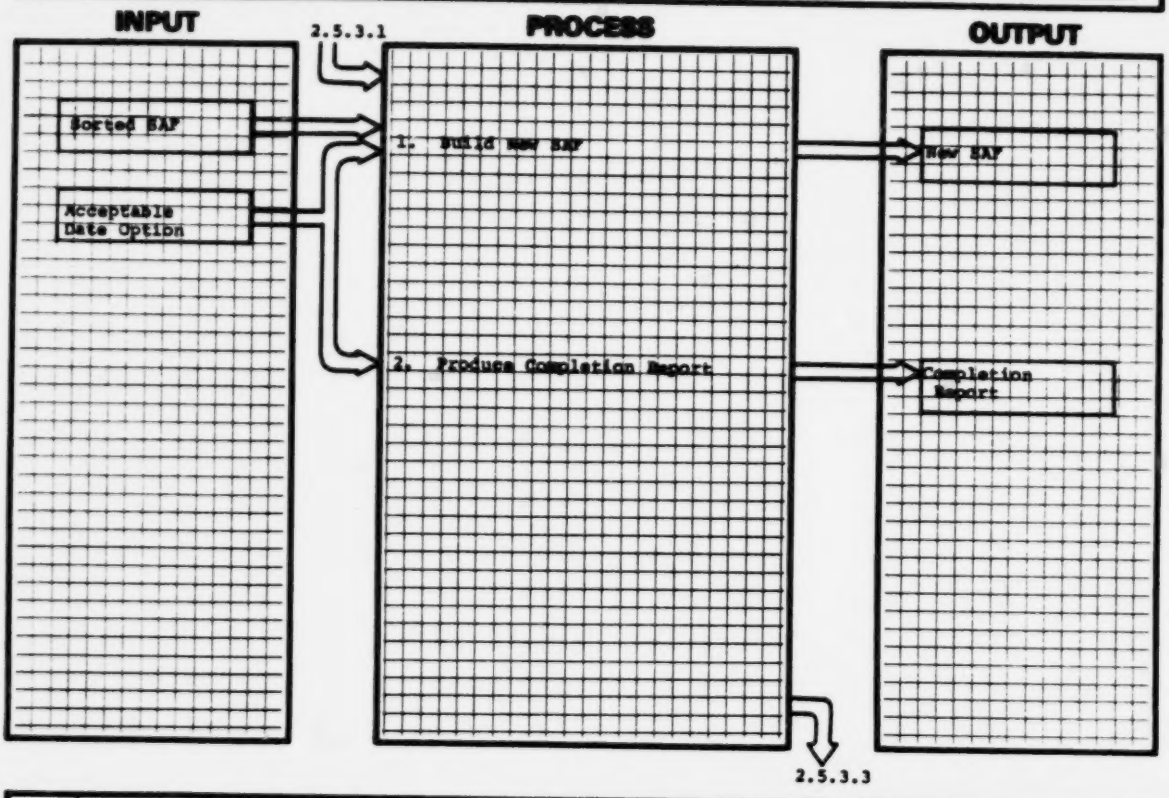


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the six contaminant Sample Analysis File (SAF) header records, SAFI-HEDR-COMP-RECORD, by checking the processing date, SAFI-HC-DATE, in each of the first six records. If any of the dates are 'zeroes' or any of the six header records are not present, processing will be terminated. If none of the dates are 'zeroes', processing continues. NOTE: The six contaminant SAF's, from programs WAQC031 through WAQC037, each containing one header record, were externally merged and sorted into one sorted SAF with six header records. The sort sequence was PWS ID, Contaminant ID, Sample ID Code, Sample Date, Sample Time, Sample Type, and Record Type.		WAQC038	221

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 3-8-77 Page: 1 of 1

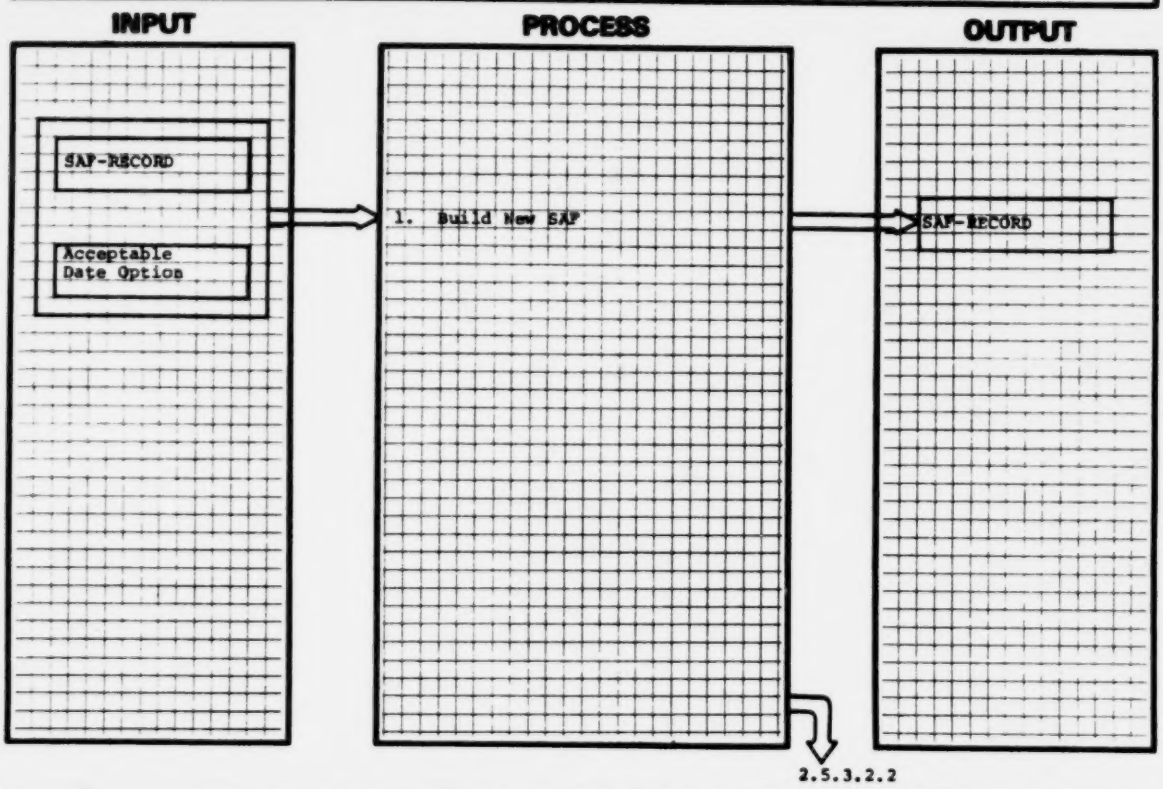
Diagram No.: 2.5.3.2 Description: Build New SAF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Examine the Acceptable Date Option to determine if the New Sample Analysis File (SAF) is to be built. If the Acceptable Date Option is 'zeroes', then do not build the New SAF, but skip to step 2. If the Acceptable Date Option is not 'zeroes', then build the New SAF by copying the sorted SAF records to the New SAF, dropping the header records.	2.5.3.2.1	WAQC038	
2	If the Acceptable Date Option is not 'zeroes, then produce the Completion Report with SAF statistics.	2.5.3.2.2	WAQC038	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-8-77 Page: 1 of 1
Diagram No.: 2.5.1.2.1 Description: Build New SAF

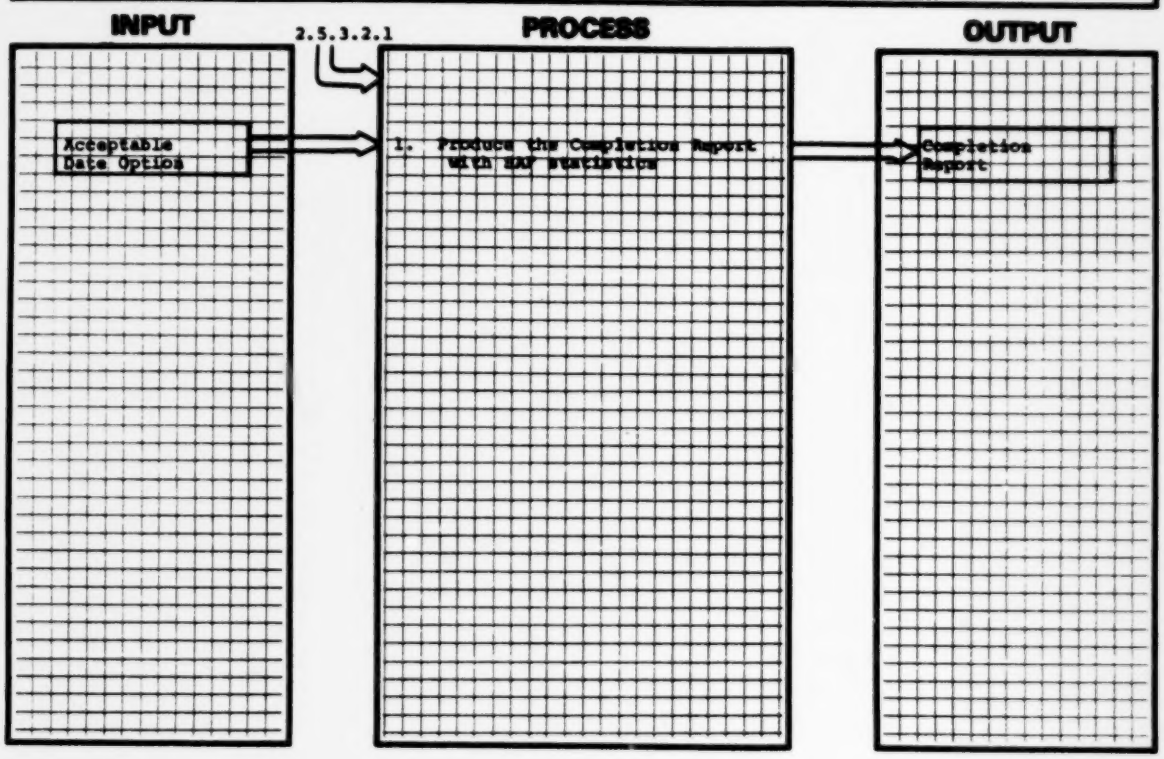


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the New Sample Analysis File (SAF) by assigning a new sample key to each of the sorted SAF records without sample keys. The sample key is a 10 digit field, the first 5 digits being the processing date (in Julian format) and the second 5 digits being a sequential number. In old SAF records, both the date and number fields of the sample key are filled in and these records are used to increment the 'number of records originally on the file' counter. In new SAF records, the date field of the sample key is filled in but the number field is zeroes. The counter is filled from a stored number incremented by 1 for each new SAF record and initialized at zero for each run of this program. These records are used to increment the 'number of new records added to the file' counter. The 'number of records currently on the file' is the sum of the above two counters.		WAQC038	254

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-8-77 Page: 1 of 1

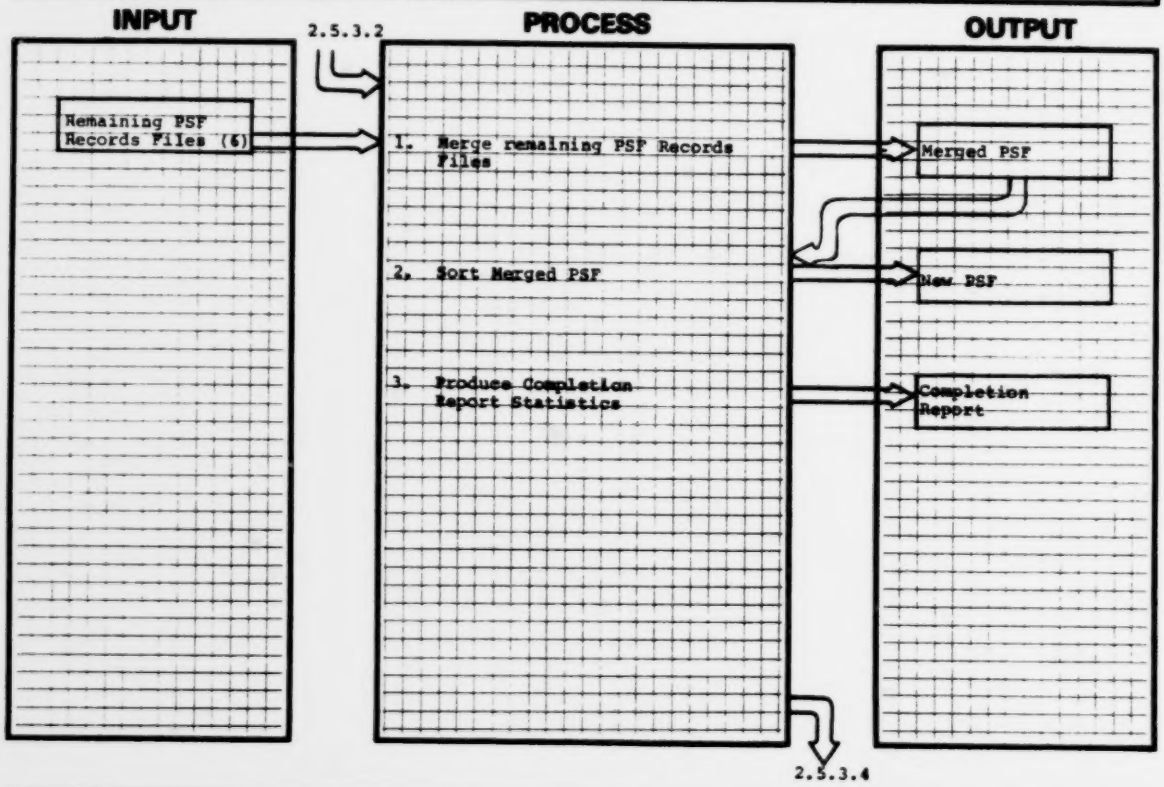
Diagram No.: 2.5.1.2.2 Description: Produce the Completion Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The Completion Report is always produced and either of the following two formats may be used: a. The Completion Report with Sample Analysis File (SAF) statistics contains: 1. Totals which were accumulated during the build process: (a) number of records originally on the file (b) number of new records added to the file (c) number of records currently on the file 2. Totals (b) and (c) are computed as a percent of (a).		WAQC038	327

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-8-77 **Page:** 1 of 1
Diagram No.: 2.5.3.3 **Description:** Build New PSF

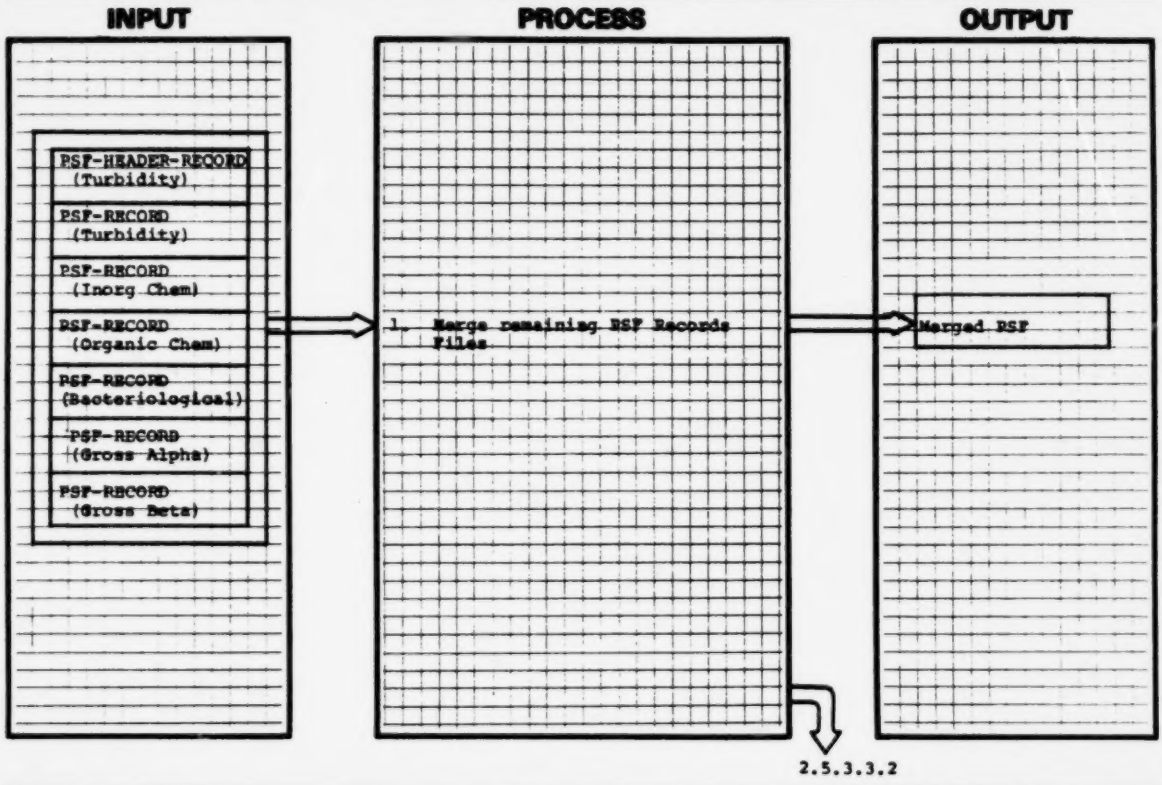


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Merge the Contaminant Remaining Periodic Sample File (PSF) Records Files to form one file.	2.5.3.3.1	WAQC038	
2	Sort the Merged PSF from step 1 into the proper sequence to form the new PSF. The PSF sort sequence is PWS ID, Contaminant ID, Sample ID Code, Sample Date, Sample Time, Sample Type and Record Type.	2.5.3.3.2	WAQC038	
3	Produce the Completion Report PSF statistics.	2.5.3.3.3	WAQC038	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-8-77 **Page:** 1 of 1

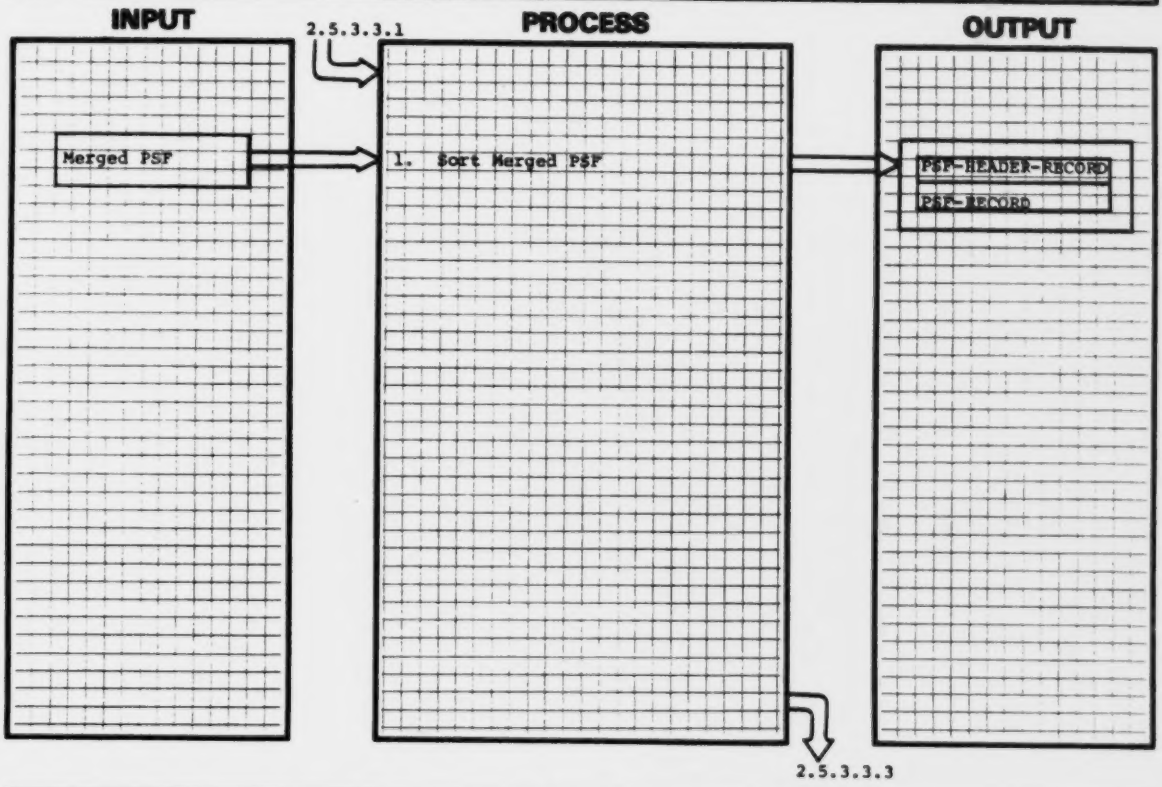
Diagram No.: 2.5.3.3.1 **Description:** Merge Remaining PSF Records Files



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Merge the six Contaminant Remaining Periodic Sample File (PSF) Records Files, PSF-RECORD, by copying each of the six files in turn to the merged PSF. The files are copied in the following sequence: Turbidity, Inorganic Chemical, Organic Chemical, Bacteriological, Gross Alpha, and Gross Beta. The Turbidity remaining PSF Records File also contains the PSF header record, PSF-HEADER-RECORD, which is stored to be written later. The total number of PSF records on the file is accumulated during the merge and placed in the new PSF-HEADER-DATE field of the header record which is then written as the last record of the merged PSF.		WAQC038	251 252

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-8-77 **Page:** 1 of 1
Diagram No.: 2.5.3.3.2 **Description:** Sort Merged PSF

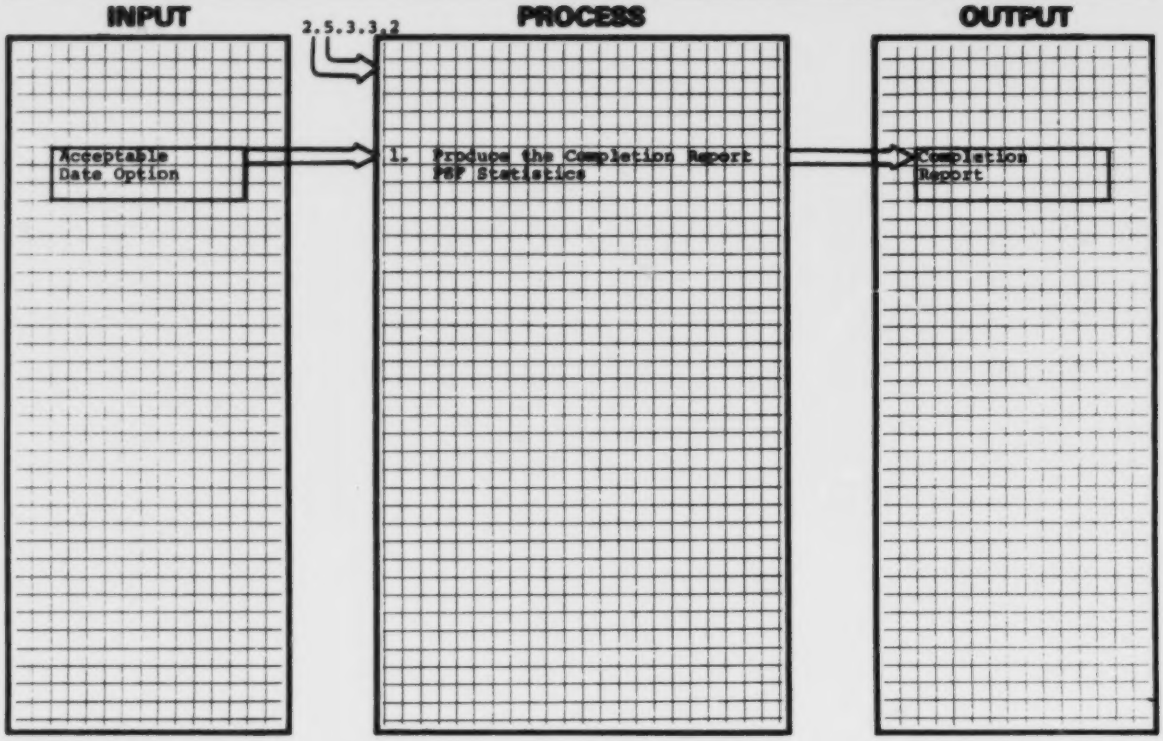


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The merged Periodic Sample File (PSF) is sorted into the proper sequence to become the New PSF. The PSF sequence is PWS ID, Contaminant ID, Sample ID Code, Sample Date, Sample Type, Sample Time, and Record Type. The PSF-HEADER-RECORD has a PWS ID of 'LOW VALUES' which ensures that it will remain at the front of the file.		WAQC038	251 252

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-8-77 Page: 1 of 1

Diagram No.: 2.5.3.3.3 Description: Produce the Completion Report PSF Statistics

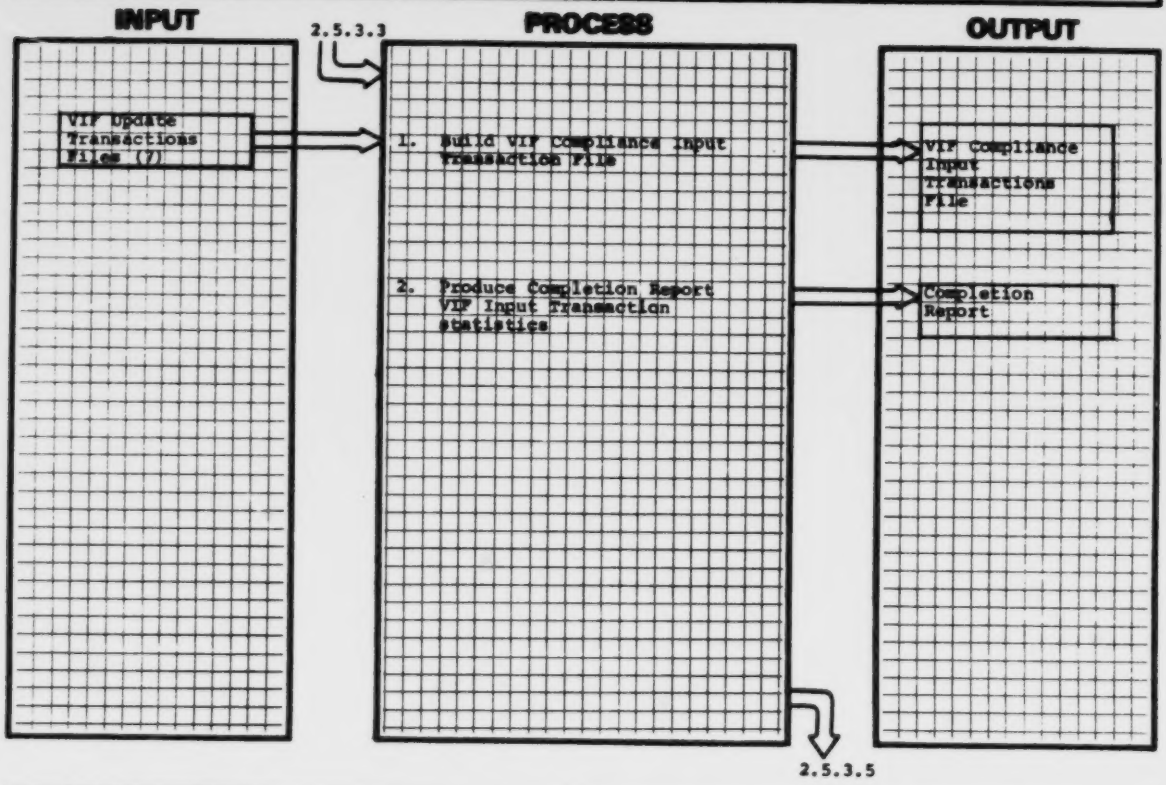


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Completion Report containing the total number of records currently on the Periodic Sample File (PSF). This total was accumulated during the merge process (HIPO 2.5.3.3.1).		WAQC038	327

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 3-8-77 Page: 1 of 1

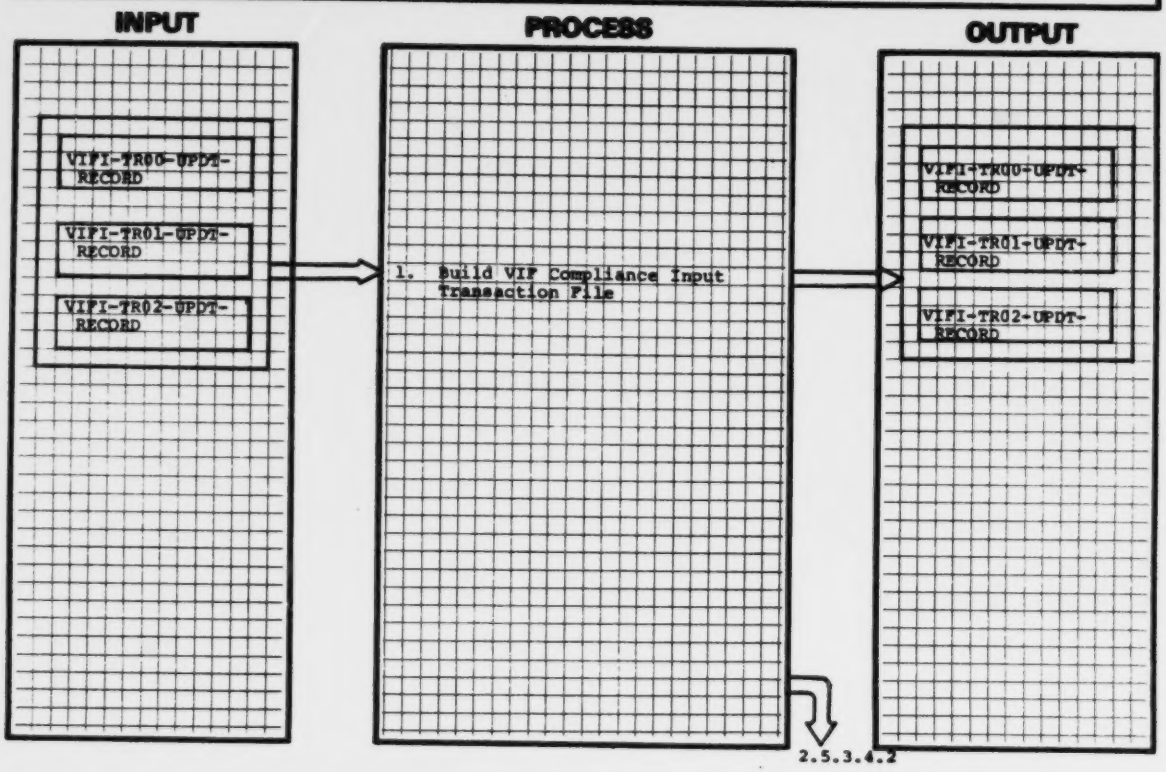
Diagram No.: 2.5.3.4 Description: Build VIF Compliance Input Transactions File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Violations File (VIF) Compliance Input Transaction File by copying the seven (7) VIF Update Transactions Files to form one file.		WAQC038	
2	Produce the Completion Report VIF Input Transaction statistics.			

MODEL STATE INFORMATION SYSTEM

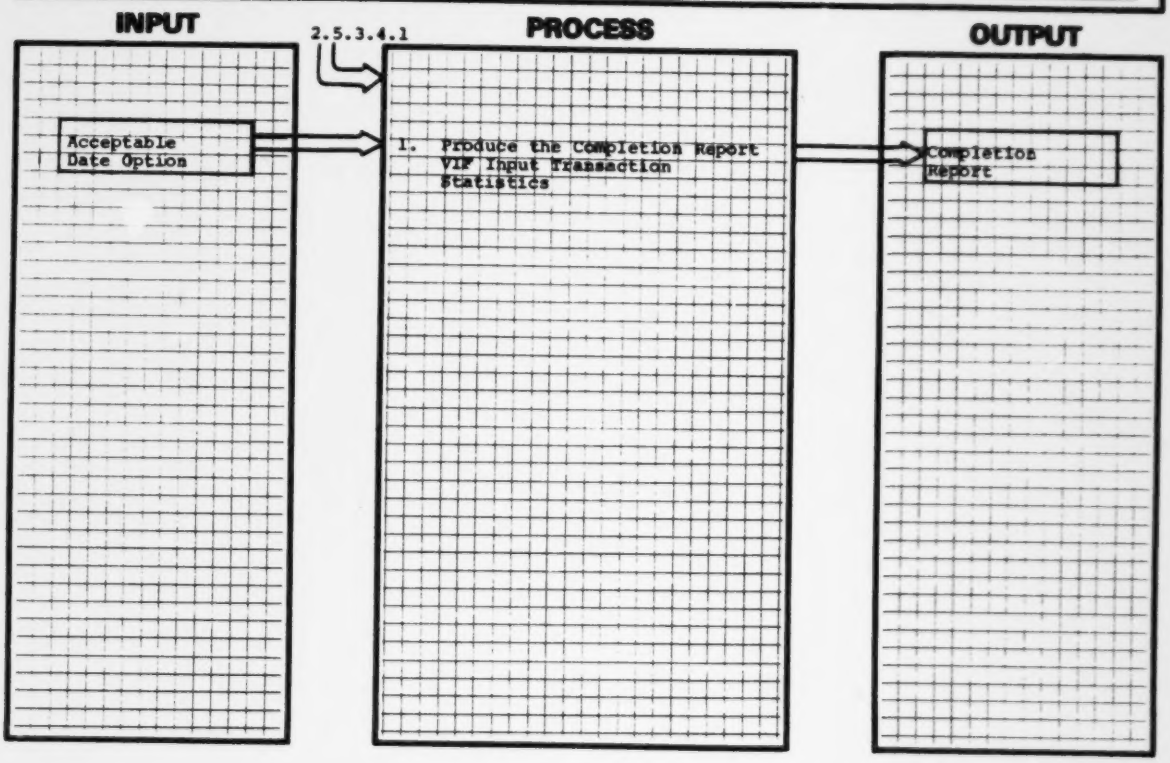
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-8-77 **Page:** 1 of 1
Diagram No.: 2.5.3.4.1 **Description:** Build VIF Compliance Input Transaction File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The six contaminant Violations File (VIF) Update Transactions Files are copied with the Operations Report VIF Update File to form the VIF Compliance Input Transaction File. This file is used as input to the VIF Update process (HIPO 2.7). This build consists of copying all the records from each of the six input files, one file at a time, to the output file.		WAQC038	223 224 225

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-8-77 **Page:** 1 of 1
Diagram No.: 2.5.3.4.2 **Description:** Produce Completion Report with VIF Input Statistics

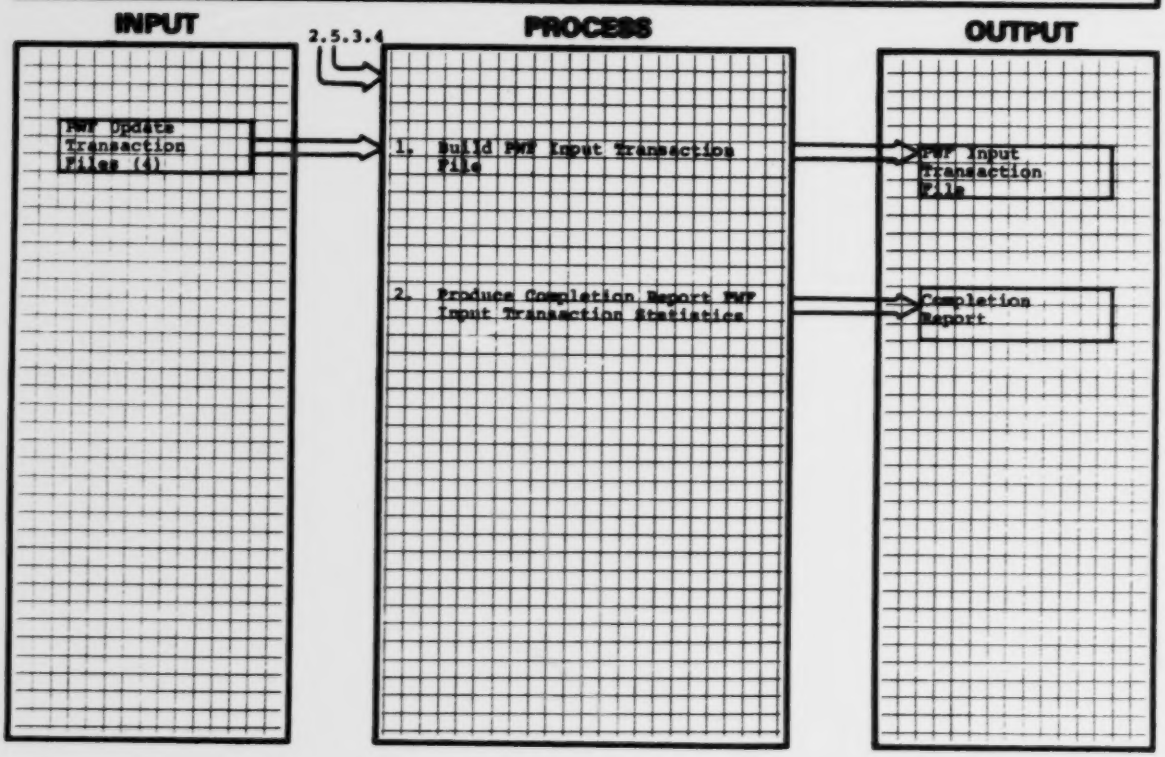


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Completion Report containing the total number of records currently on the Violations File (VIF) Input Transaction File. This total was accumulated during the merge process (HIPO 2.5.3.4.1).		WAQC038	327

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-8-77 **Page:** 1 of 1

Diagram No.: 2.5.3.5 **Description:** Build PWF Input Transaction File

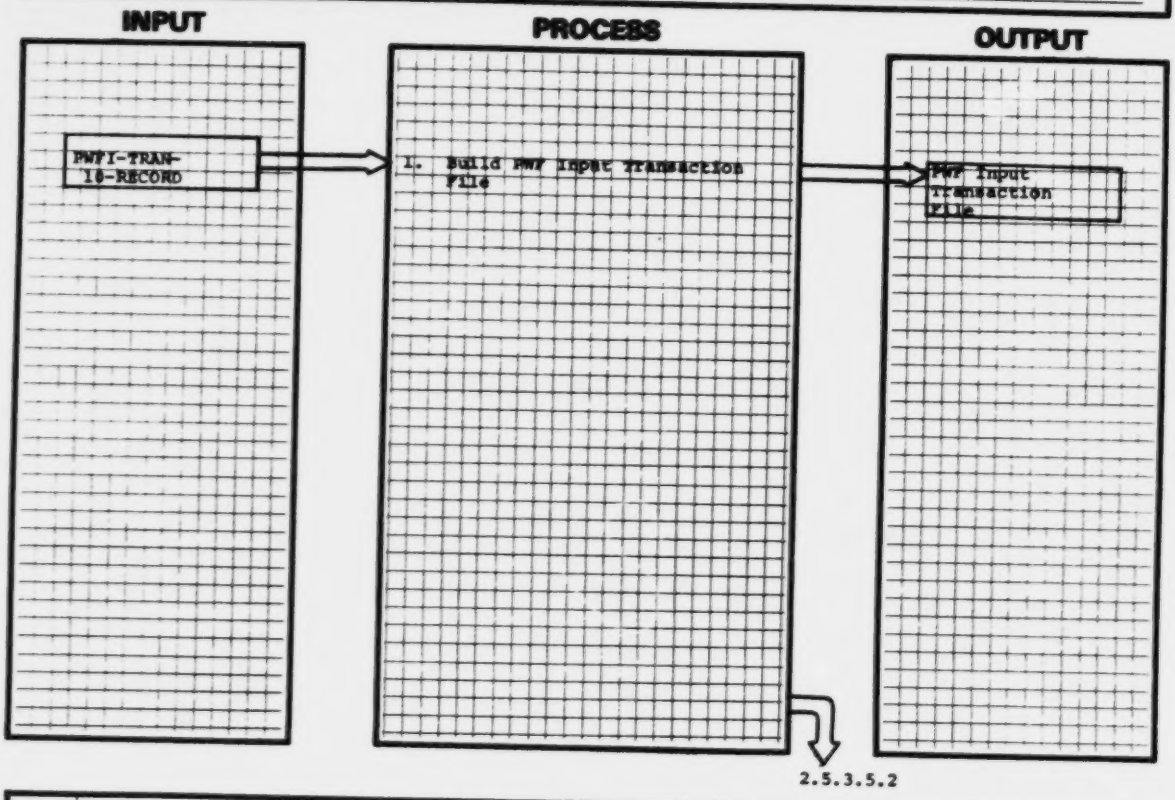


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Public Water File Input (PWFI) Transaction-10 (TRAN-10) File by copying the two (2) PWF Update Transactions Files into one file.	2.5.3.5.1	WAQC038	
2	Produce the Completion Report PWF Input Transaction Statistics.	2.5.3.5.2	WAQC038	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-8-77 Page: 1 of 1

Diagram No.: 2.5.3.5.1 Description: Build PWF Input Transaction File

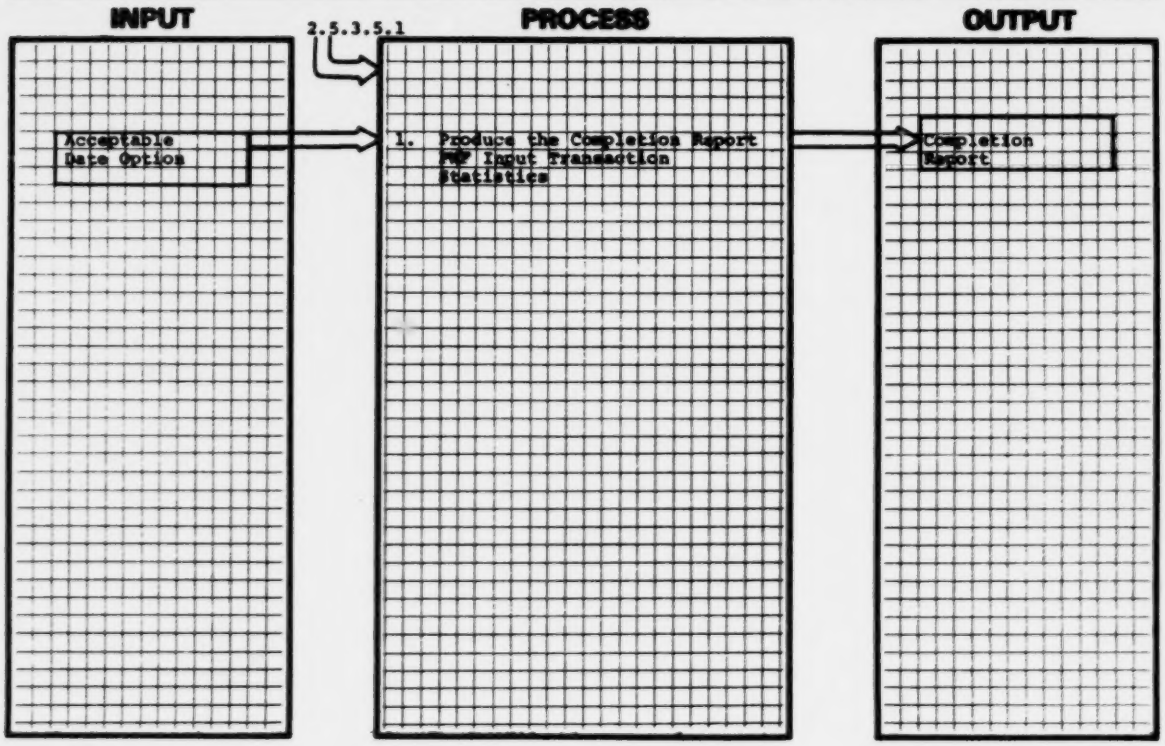


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The two Contaminant Public Water File (PWF) Update Transaction Files are copied to form the PWF Input Transaction File. This file is used as input to the PWF Update Process Program (PWSI010). This build consists of copying all the records from each of the two input files, one file at a time, to the output file.		WAQC038	PWSI. 223

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-8-77 Page: 1 of 1

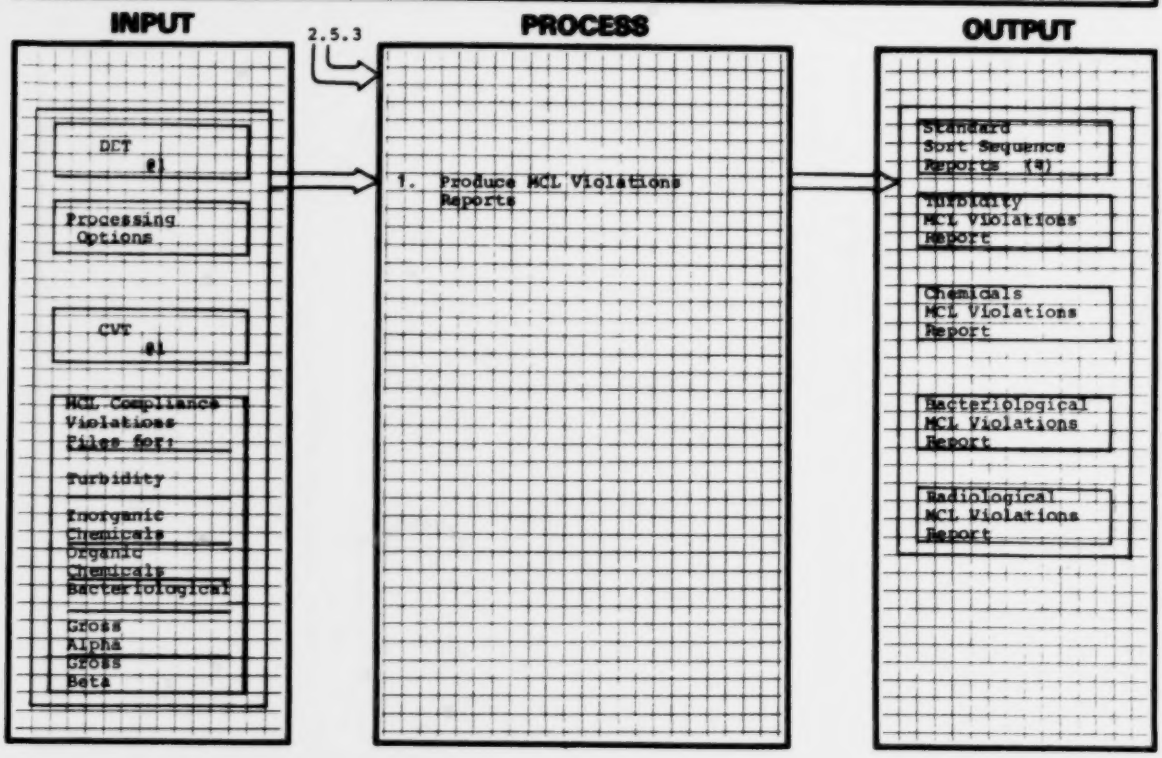
Diagram No.: 2.5.3.5.2 Description: Produce Compliance Report PWF Statistics



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Completion Report containing the total number of records currently on the Public Water File (PWF) Input Transaction File. This total was accumulated in the merge process (HIPO 2.5.3.5.1).		WAQC038	327

MODEL STATE INFORMATION SYSTEM

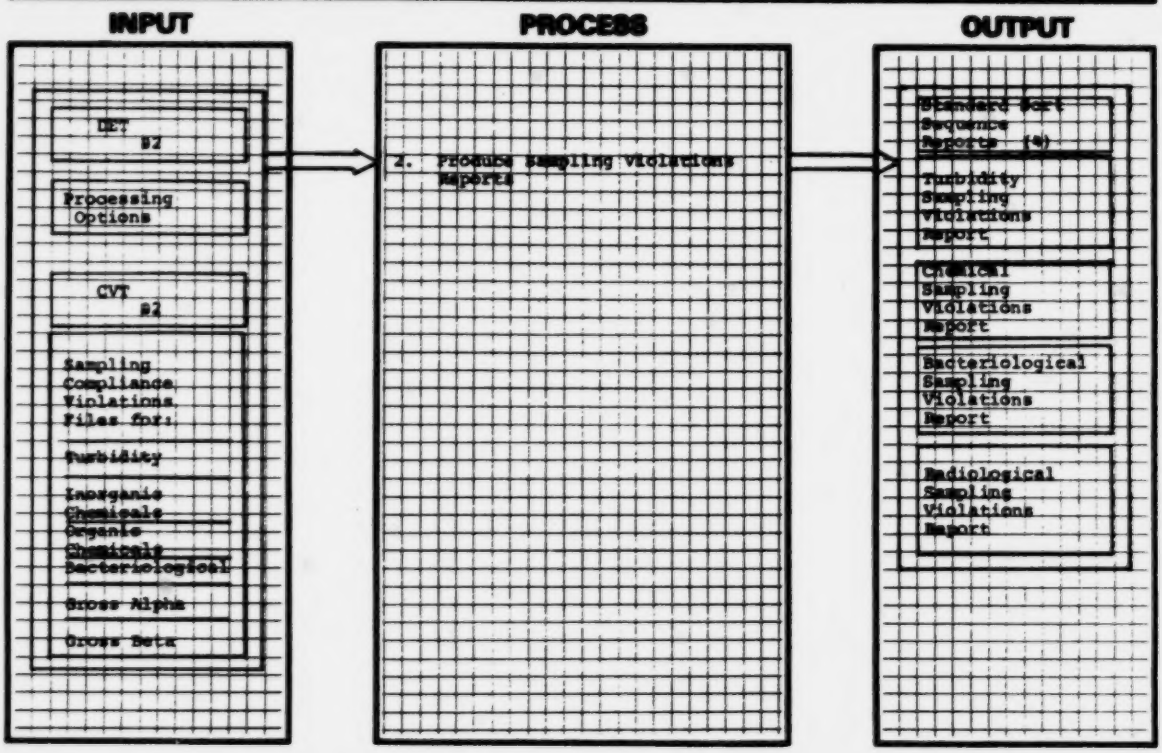
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 of 3
Diagram No.: 2.5.4 **Description:** Produce Compliance Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Maximum Contaminant Level (MCL) Violations Reports are produced as follows: (in each of the four (4) programs) The Processing Options records, together with the Data Element Table (DET), are used to build a sort key. The input MCL Compliance Violations File is then sorted into the user-defined sequence. After the sort, the Standard Sort Sequence Report is produced. The sorted input MCL Compliance Violations File, with information extracted from the Code Value Table (CVT), is used, in each program, to produce the appropriate MCL Violations Report.	2.5.4.1	WAQC040 WAQC041 WAQC050 WAQC051	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 2 of 3
Diagram No.: 2.5.4 **Description:** Produce Compliance Reports

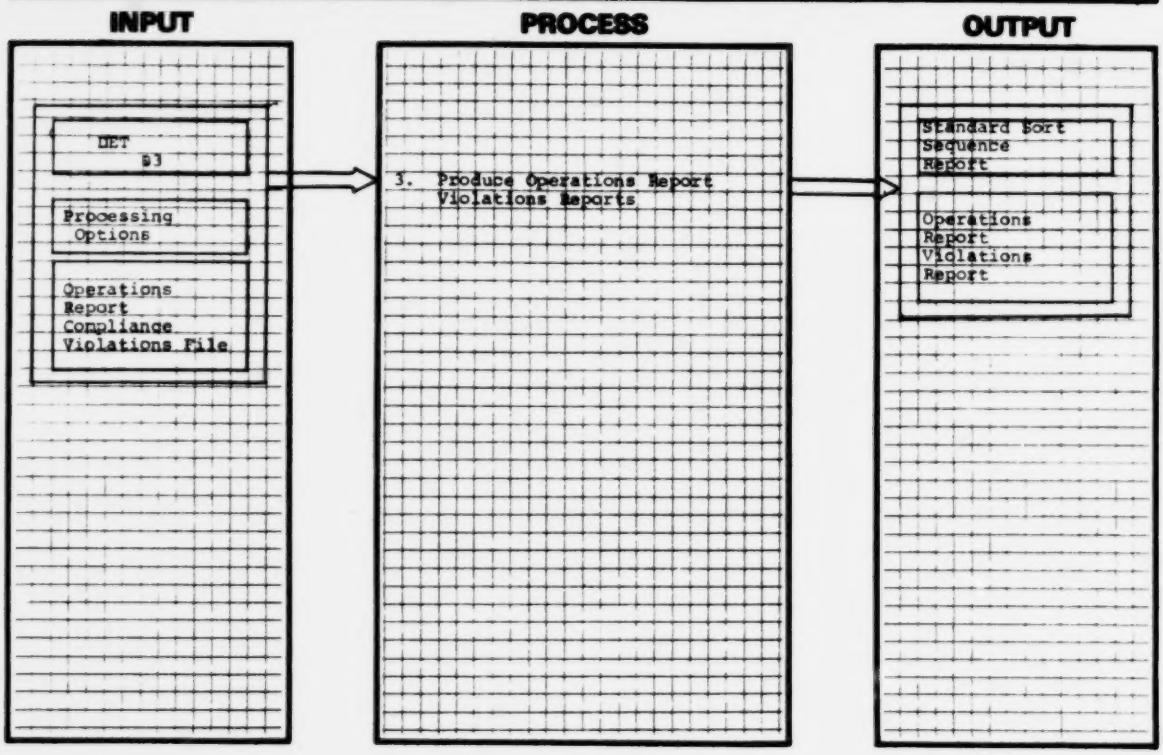


STEP	EXTENDED DESCRIPTION	REFERENCES		
		INFO	PROGRAM	OTHER
2	The Sampling Violations Reports are produced as follows: (in each of the four (4) programs) The Processing Options records, together with the Data Element Table (DET), are used to build a sort key. The input Sampling Compliance Violations File is then sorted into the user-defined sequence. After the sort, the Standard Sort Sequence Report is produced. The sorted input Sampling Compliance Violations File, with information extracted from the Code Value Table (CVT), is used, in each program, to produce the appropriate Sampling Violations Report.	2.5.4.2	WAQC060 WAQC061 WAQC070 WAQC080	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 3 of 3

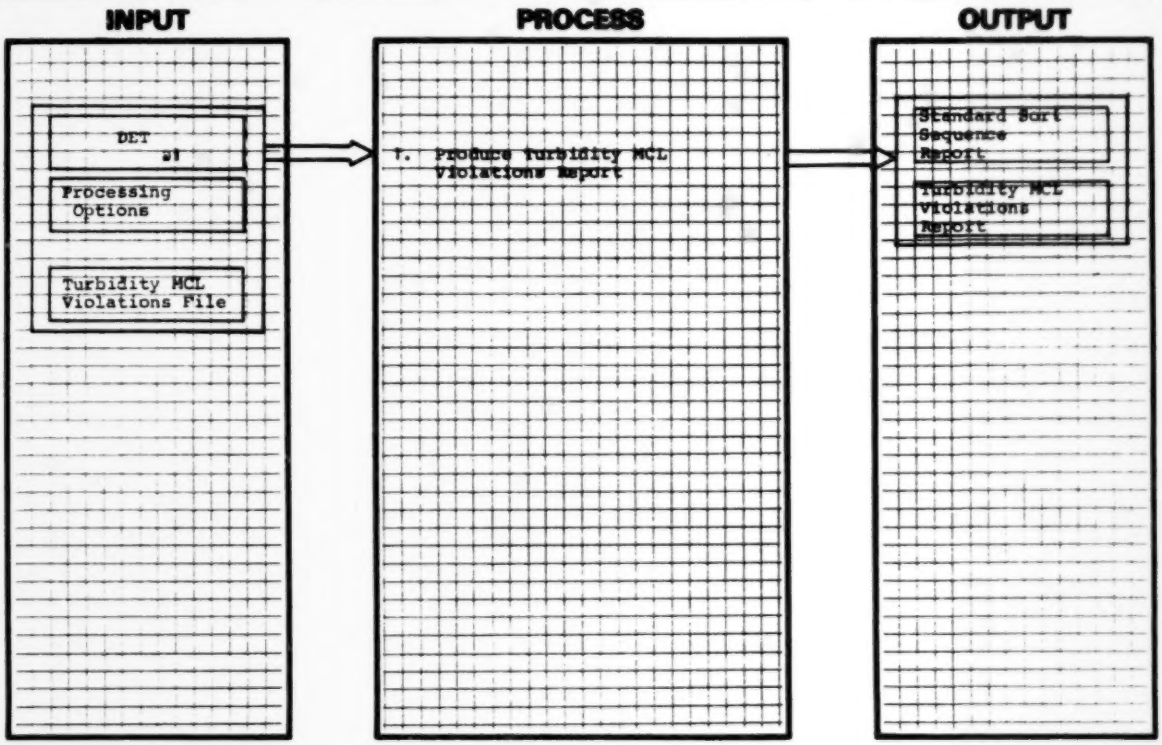
Diagram No.: 2.5.4 **Description:** Produce Compliance Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	The Operations Report Violations Report is produced as follows: The Processing Options records, together with the Data Element Table (DET), are used to build a sort key. The input Operations Report Compliance Violations File is then sorted into the user-defined sequence. After the sort, the Standard Sort Sequence Report is produced. The sorted input Operations Report Compliance Violations File is used to produce the Operations Report Violations Report.	2.5.4.3	WAQC090	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 of 4
Diagram No.: 2.5.4.1 **Description:** Produce MCL Violations Report

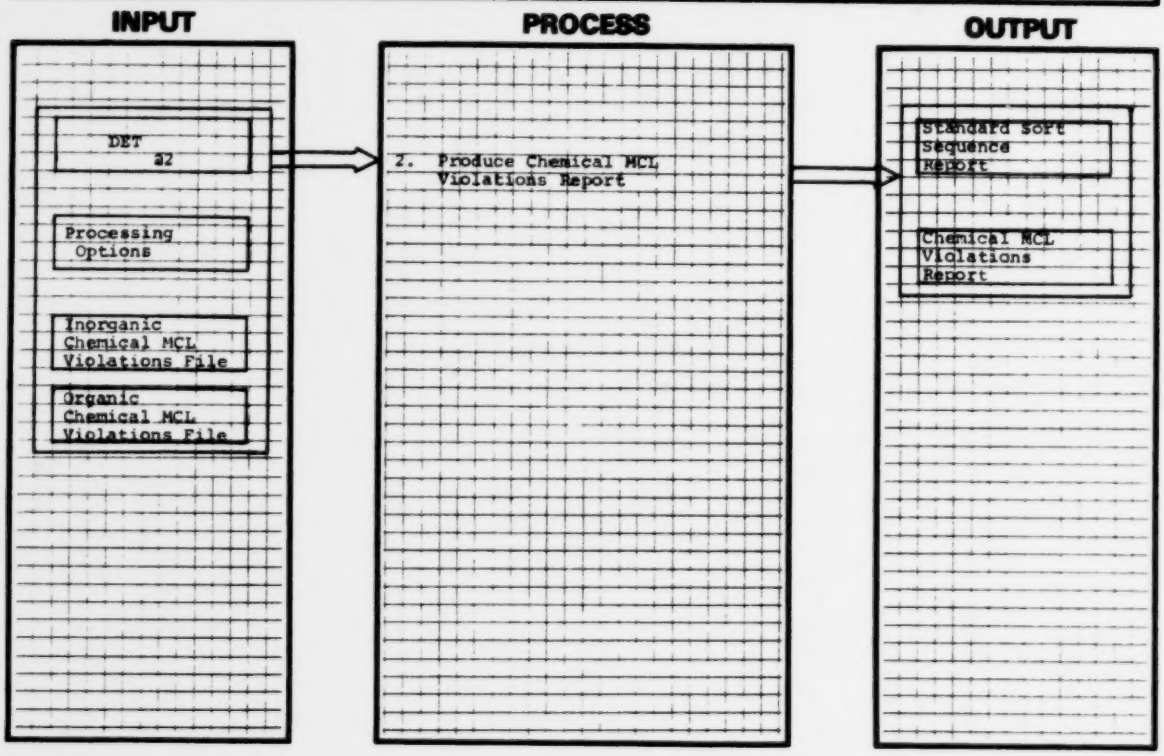


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Turbidity Maximum Contaminant Level (MCL) Violations Report is produced in a six-step process: a. The Turbidity MCL Violations File header record is verified. b. An internal Data Element Table (DET) is built from the DET. c. The 'SORT' Processing Options are edited. If any Processing Options are in error, program execution terminates. d. The Turbidity MCL Violations Report File is built from the Turbidity MCL Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step c. e. The Turbidity MCL Violations Report File is sorted by the user-defined sequence specified on the 'SORT' Processing Options records. f. The Turbidity MCL Violations Report is produced from the sorted Turbidity MCL Violations Report File. The Standard Sort Sequence Report is also produced, containing either the sort sequence or Processing Options error messages.	2.5.4.1.1	WAQC051	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 2 of 4

Diagram No.: 2.5.4.1 **Description:** Produce MCL Violations Report

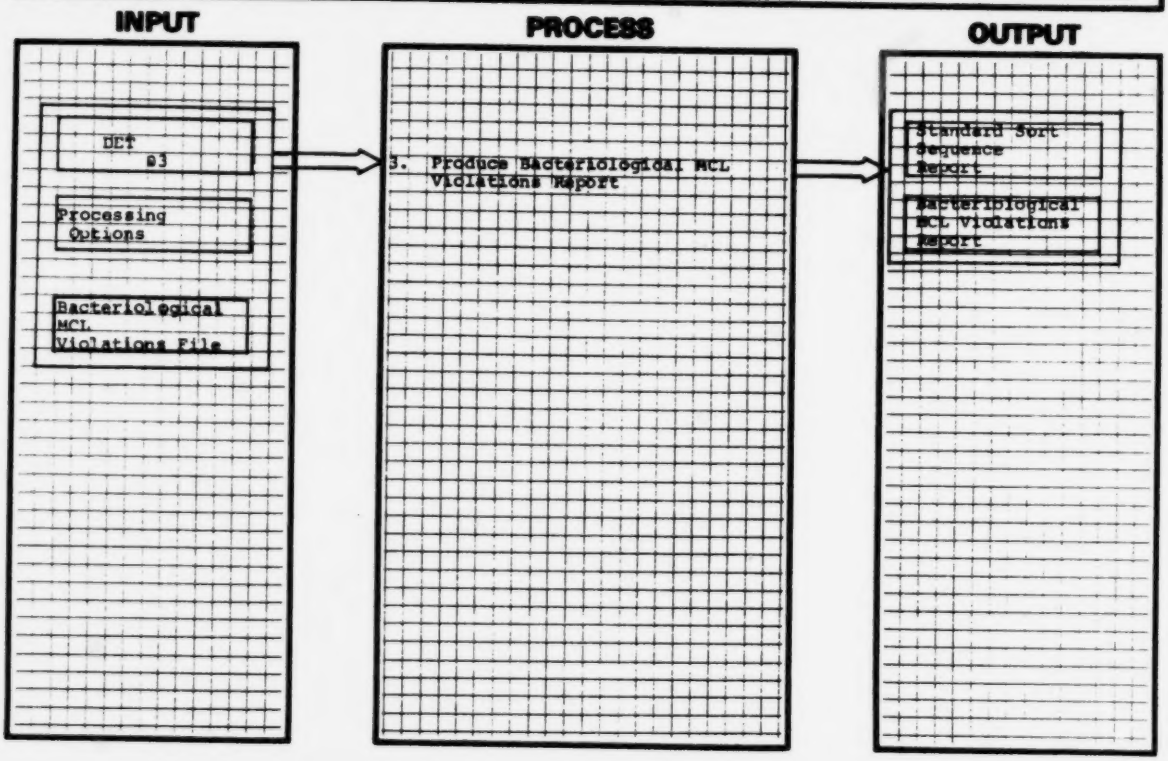


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	The Chemical Maximum Contaminant Level (MCL) Violations Report is produced in a six-step process: a. The Chemical MCL Violations File header record is verified. b. An internal Data Element Table (DET) is built from the DET. c. The 'SORT' Processing Options are edited. If any Processing Options are in error, program execution terminates. d. The Chemical MCL Violations Report File is built from the Inorganic or Organic Chemical MCL Violations Files by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step c. e. The Chemical MCL Violations Report File is sorted by the user-defined sequence specified on the 'SORT' Processing Options records. f. The Chemical MCL Violations Report is produced from the sorted Chemical MCL Violations Report File. The Standard Sort Sequence Report is also produced, containing either the sort sequence or Processing Options error messages.	2.5.4.1.2	WAQC040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 3 of 4

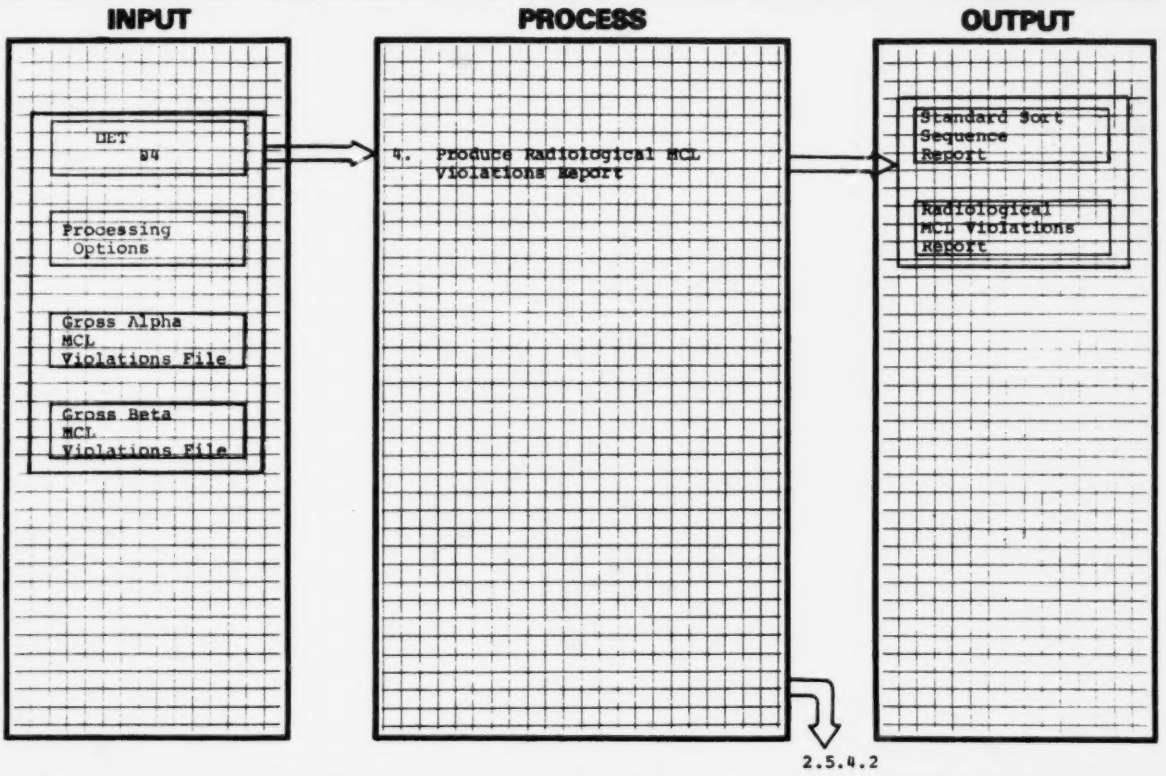
Diagram No.: 2.5.4.1 **Description:** Produce MCL Violations Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	The Bacteriological Maximum Contaminant Level (MCL) Violations Report is produced in a six-step process: a. The Bacteriological MCL Violations File header record is verified. b. An internal Data Element Table (DET) is built from the DET. c. The 'SORT' Processing Options are edited. If any Processing Options are in error, program execution terminates. d. The Bacteriological MCL Violations Report File is built from the Bacteriological MCL Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step c. e. The Bacteriological MCL Violations Report File is sorted by the user-defined sequence specified on the 'SORT' Processing Options records. f. The Bacteriological MCL Violations Report is produced from the sorted Bacteriological MCL Violations Report File. The Standard Sort Sequence Report is also produced, containing either the sort sequence or Processing Options error messages.	2.5.4.1.3	WAQC050	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 4 of 4
Diagram No.: 2.5.4.1 **Description:** Produce MCL Violations Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
4	The Radiological Maximum Contaminant Level (MCL) Violations Report is produced in a six-step process: a. The Radiological MCL Violations File header record is verified. b. An internal Data Element Table (DET) is built from the DET. c. The 'SORT' Processing Options are edited. If any Processing Options are in error, program execution terminates. d. The Radiological MCL Violations Report File is built from the Gross Alpha or Gross Beta MCL Violations Files (VIF's) by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in step c. e. The Radiological MCL Violations Report File is sorted by the user-defined sequence specified on the 'SORT' Processing Options records. f. The Radiological MCL Violations Report is produced from the sorted Radiological MCL Violations Report File. The Standard Sort Sequence Report is also produced, containing either the sort sequence or Processing Options error messages.	2.5.4.1.4	WAQC041	

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC051
DATE: February 11, 1977

I. OBJECTIVES:

The objective of this program is to produce the Turbidity Maximum Contaminant Level (MCL) Violations Report sorted in a user-defined sequence using data from the Turbidity MCL Violations File.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Turbidity Maximum Contaminant Level Violations File	VIFI-HEDR-REPT-RECORD	WAQC.213
		VIFI-M-REPT-RECORD	WAQC.216
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layout:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Turbidity MCL Violations Report	WAQC.308
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify that the Header Turbidity MCL Violations File Record contains a valid processing date or '000000'. If '000000' that indicates that processing is to be terminated without report production.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the 'SORT' Processing Options records for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic names, and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Turbidity Maximum Contaminant Level (MCL) Violations Report File by constructing the sort keys using the 'SORT' Processing Options and the Turbidity MCL Violations File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Turbidity MCL Violations File.

5. Sort the Turbidity MCL Violations Report File from Step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Turbidity MCL Violations Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

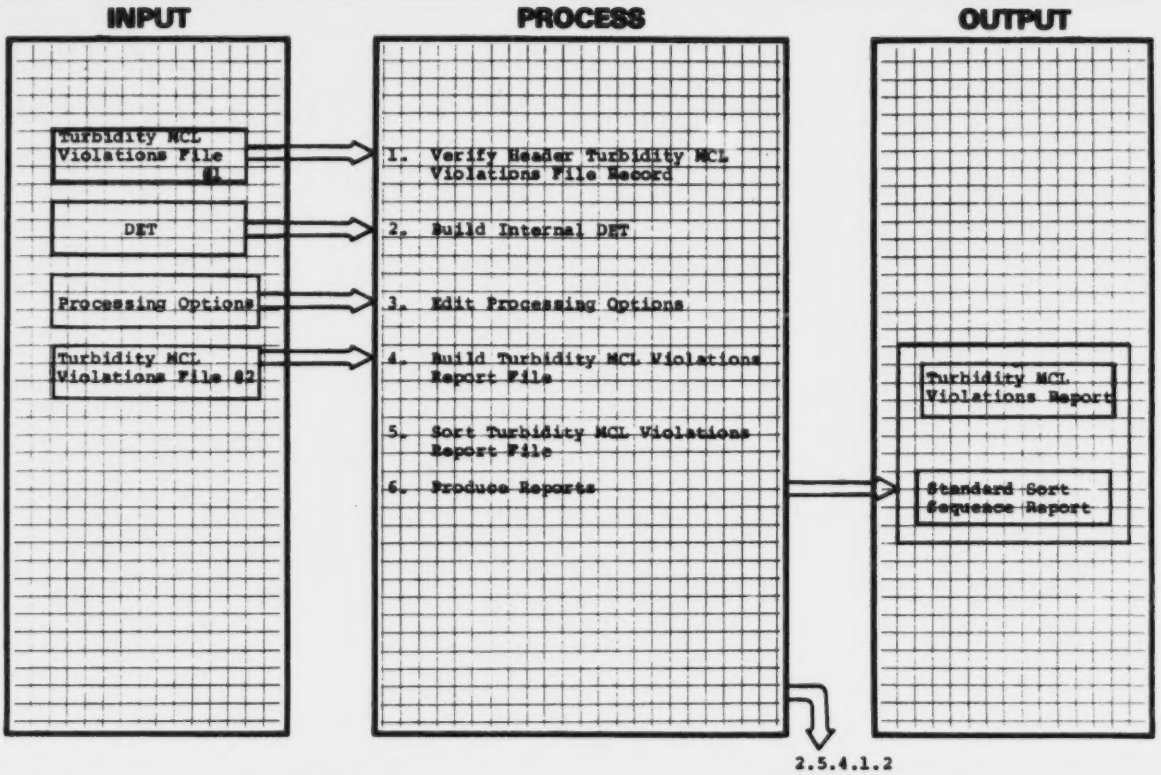
1. Sort Options

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1
Diagram No.: 2.5.4.1.1 **Description:** Produce Turbidity Maximum Contaminant Level Violations Report

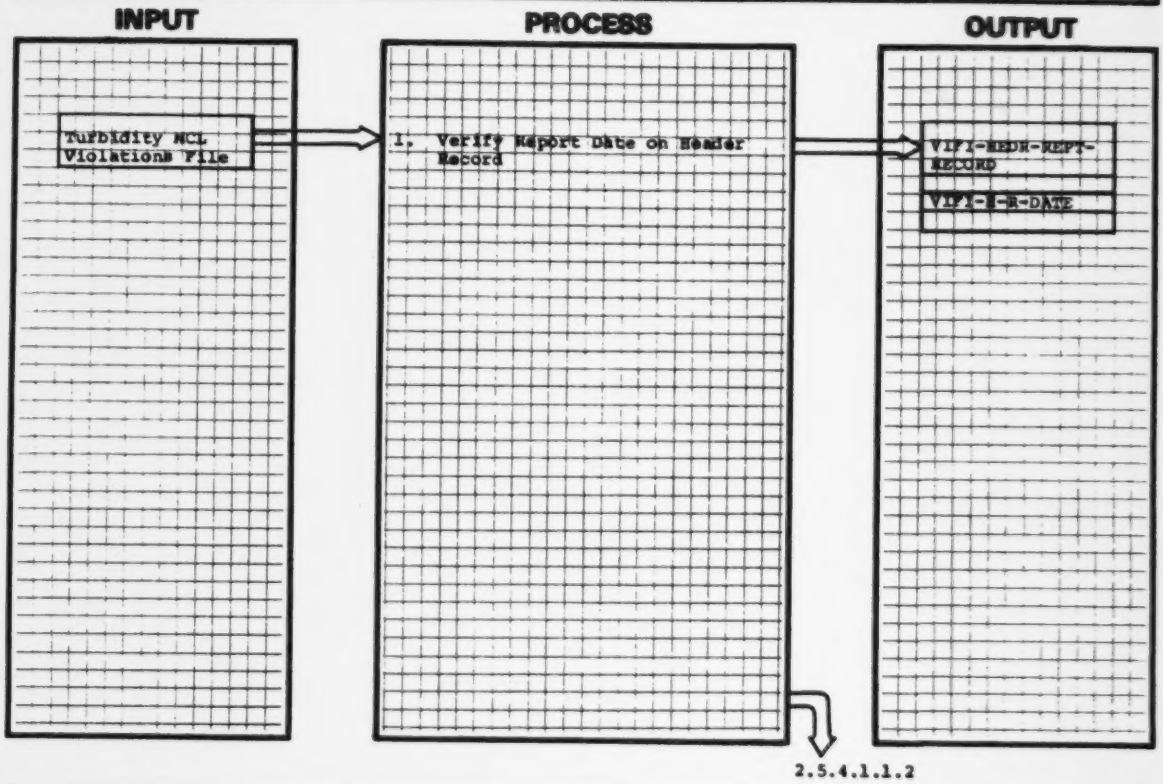


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Header Turbidity Maximum Contaminant Level (MCL) Violations File Record to ensure that processing is to continue.	2.5.4.1.1.1	WAQC051	
2	Build an internal Data Element Table (DET) from the DET.	2.5.4.1.1.2	WAQC051	
3	Edit the 'SORT' Processing Options records. If any Processing Options are in error, processing will be terminated.	2.5.4.1.1.3	WAQC051	
4	Build the Turbidity Maximum Contaminant Level (MCL) Violations Report File from the Turbidity MCL Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 2. If there are no 'SORT' Processing Options records, the sort key is built sequentially.	2.5.4.1.1.4	WAQC051	
5	Sort the Turbidity MCL Violations Report File by a user-defined sequence specified by the 'SORT' Processing Options or by the sequentially created sort key.	2.5.4.1.1.5	WAQC051	
6	Produce the Turbidity MCL Violations Report by printing data from the sorted Turbidity MCL Violations Report File. Produce the Standard Sort Sequence Report which will contain either the sort sequence report or the Processing Options errors.	2.5.4.1.1.6	WAQC051	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

Diagram No.: 2.5.4.1.1.1 Description: Verify Header Turbidity MCL Violations File Record

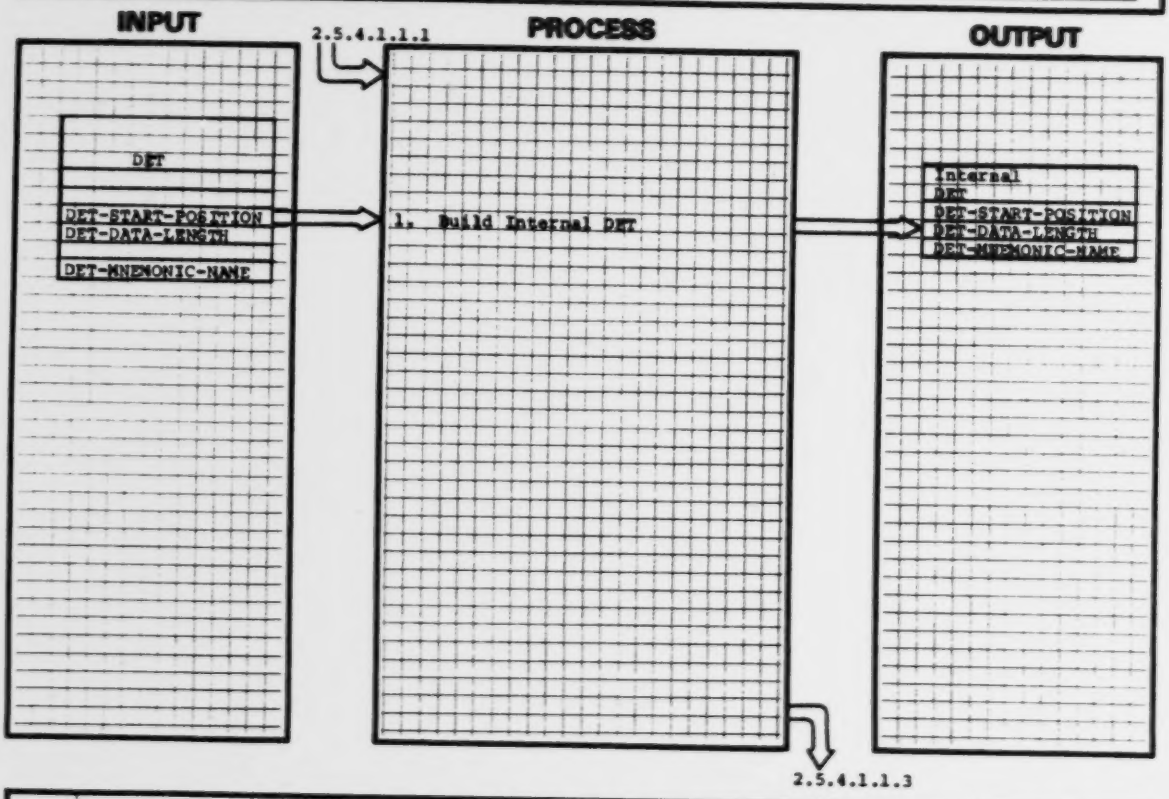


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Turbidity Maximum Contaminant Level (MCL) Violations File is written during execution of program WAQC031 and carries information from the 'PROC' record processed by program WAQC025. If, for any reason, WAQC031 terminated abnormally, the field VIFI-H-R-DATE will contain '000000' signifying that this processing is to also terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for "LOW VALUES".		WAQC051	213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

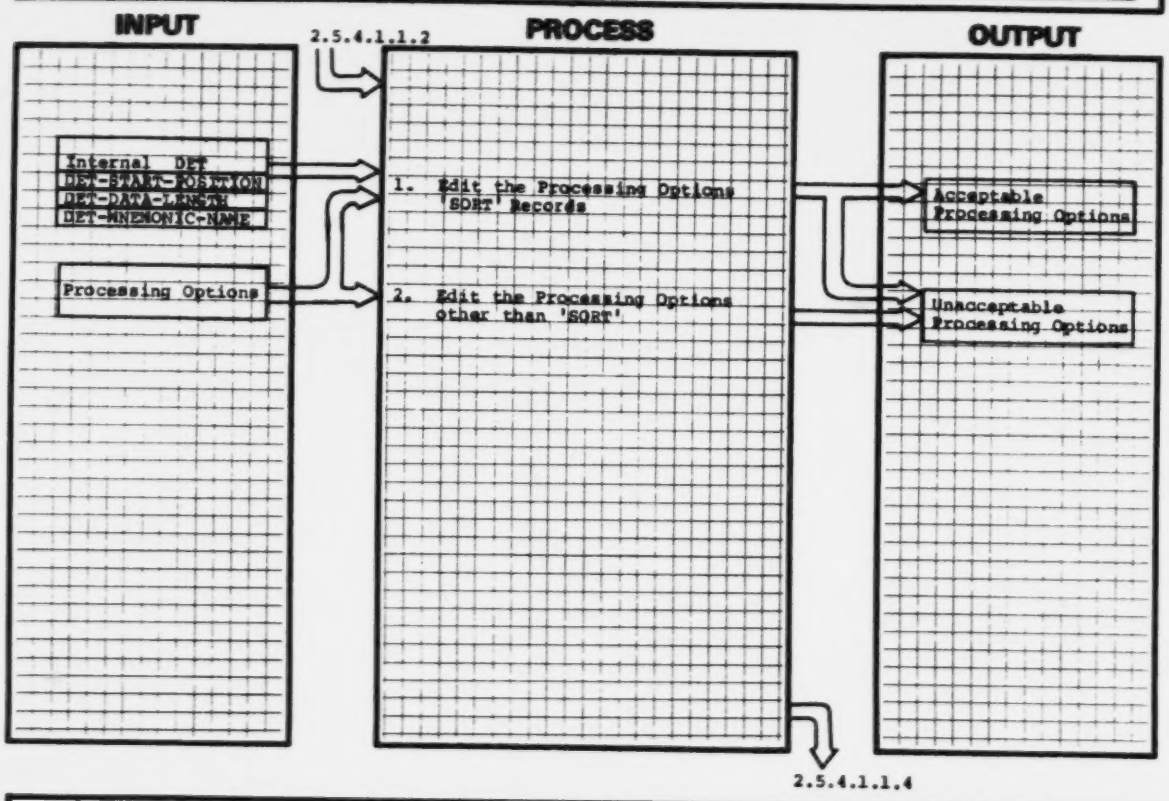
Diagram No.: 2.5.4.1.1.2 Description: Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of VI. Only the file start position, data element length, and data element mnemonic are used.		MAQC051	MSIS. 201

MODEL STATE INFORMATION SYSTEM

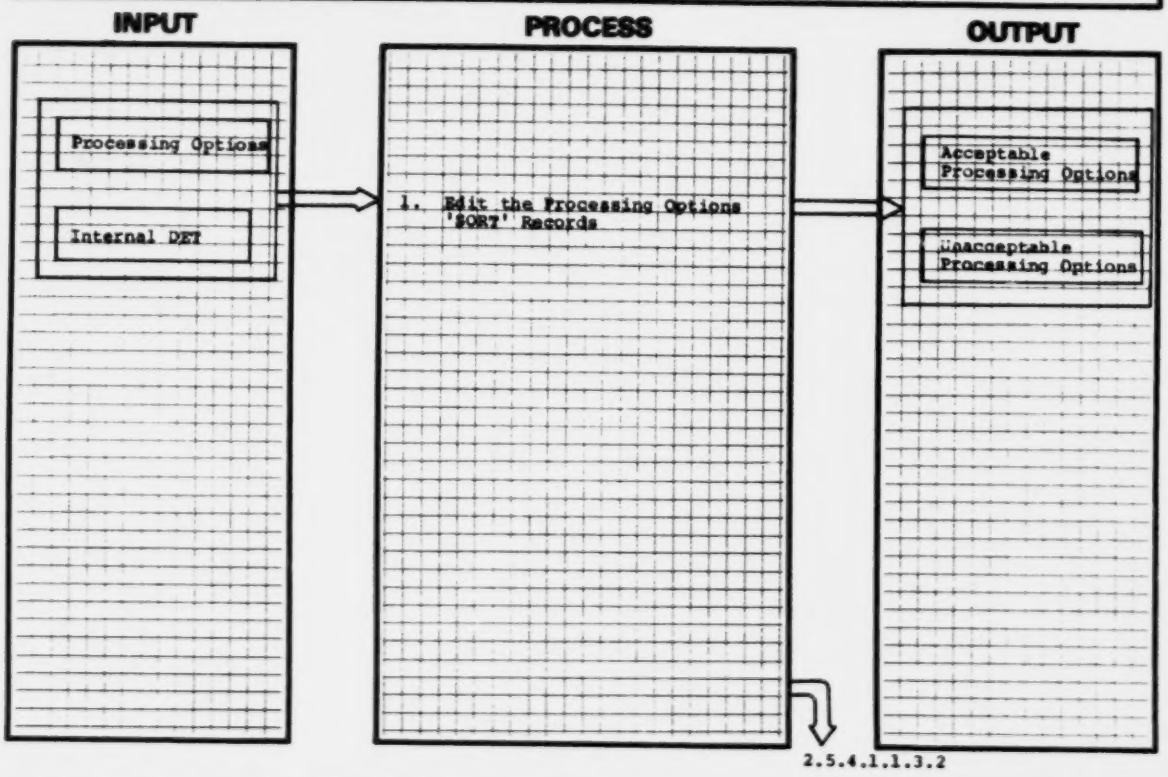
Diagram Type: Overview Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1
Diagram No.: 2.5.4.1.1.3 Description: Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) with 'SORT' in positions 1-4.	2.5.4.1.1.3.1	WAQC051	
2	Edit the Processing Options other than 'SORT'. If found, it is an error.	2.5.4.1.1.3.2	WAQC051	
	Note: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1
Diagram No.: 2.5.4.1.1.3.1 Description: Edit the Processing Options 'SORT' Records

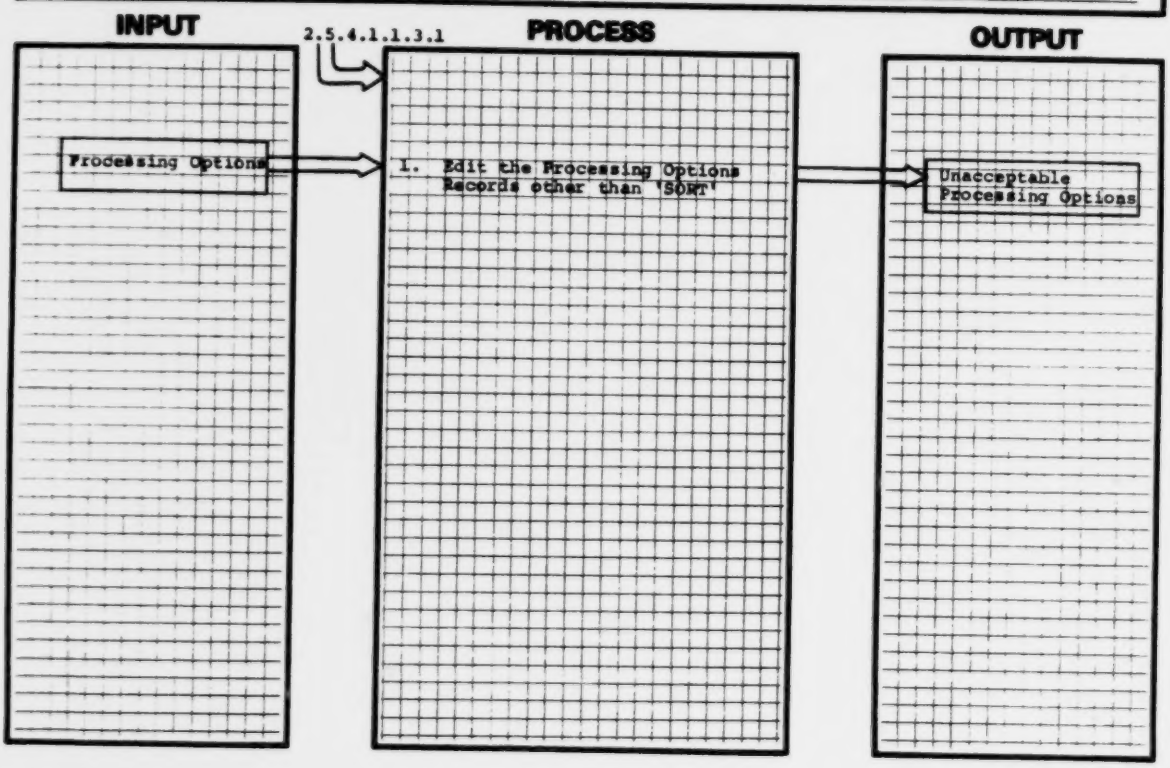


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' or 'D'. If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options records must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC051	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1

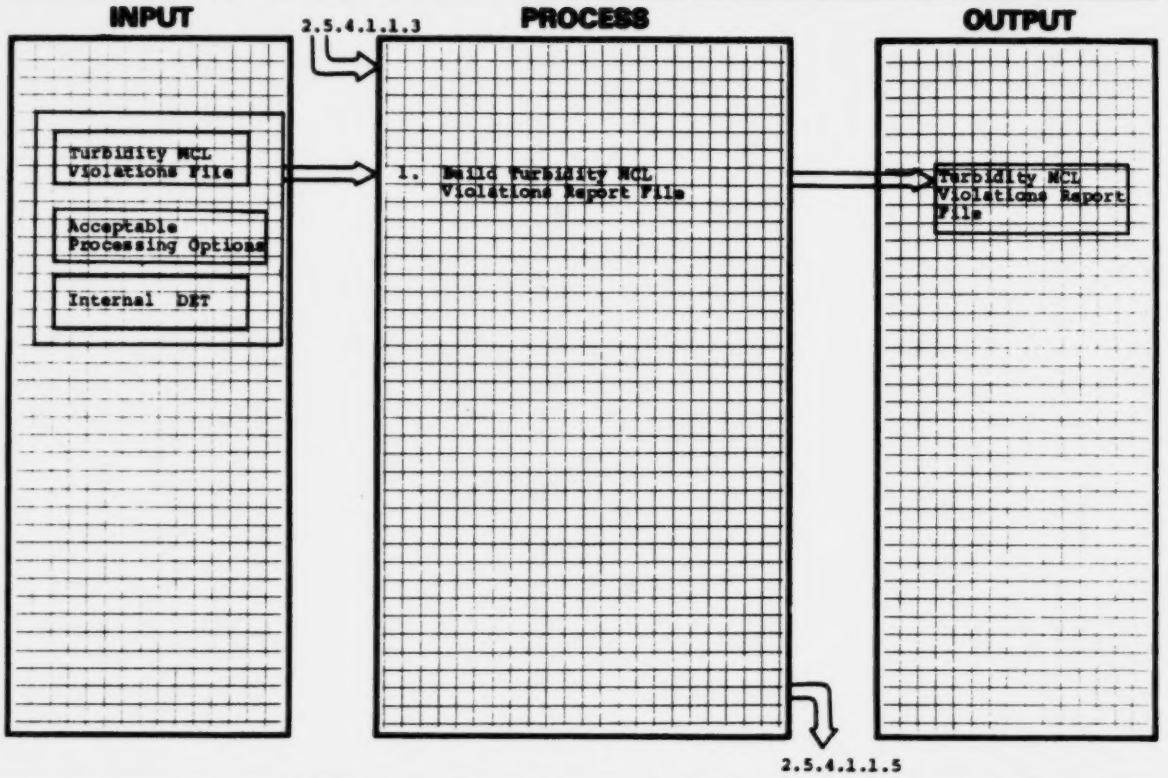
Diagram No.: 2.5.4.1.1.3.2 **Description:** Edit the Processing Options Other Than 'SORT'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing will be terminated.		WAQC051	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 3
Diagram No.: 2.5.4.1.1.4 Description: Build Turbidity Maximum Contaminant Level (MCL) Violations Report File

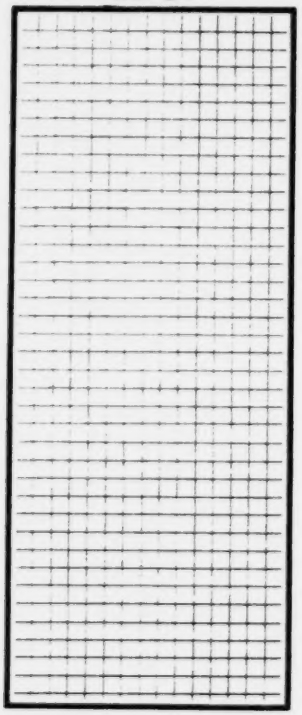


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Turbidity Maximum Contaminant Level (MCL) Violations File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Turbidity MCL Violations File record as an array of one character values. b. Match the VIFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Turbidity MCL Violations File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Turbidity MCL Violations File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		NAQC051	213 216 MSIS. 201

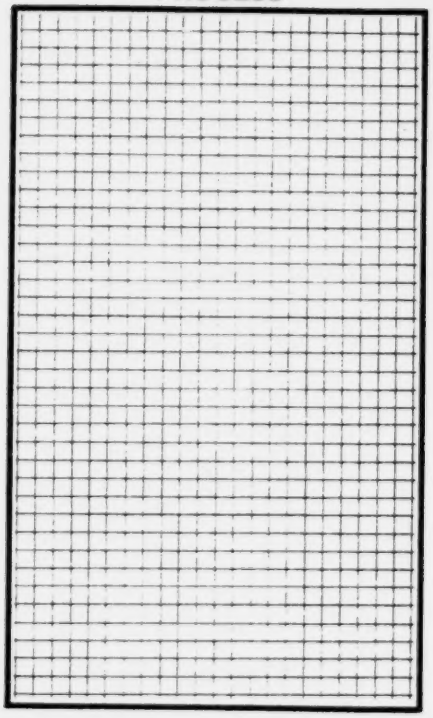
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 2 of 3
Diagram No.: 2.5.4.1.1.4 Description: Build Turbidity Maximum Contaminant Level (MCL) Violations Report File

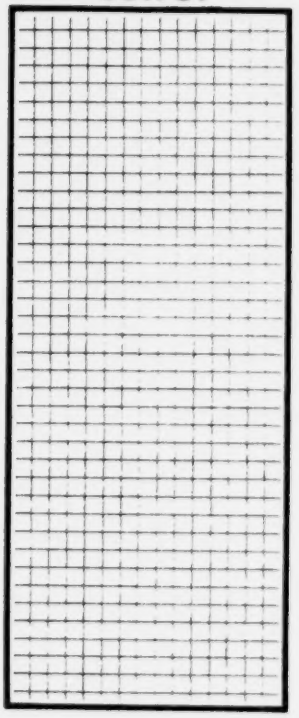
INPUT



PROCESS



OUTPUT

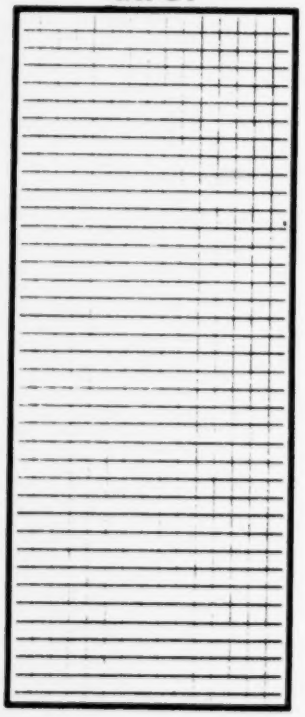


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case, all possible values in the array must be checked as follows:			
	(a) If the VIFI-SORT-MODE = 'A' (ascending), the lowest value of the data element must be used in building the sort key.		WAQC051	
	(b) If the VIFI-SORT-MODE = 'D' (descending), the highest value of the data element must be used in building the sort key.			
	If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed.			
	(3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key.			
	d. If the VIFI-SORT-MODE = 'A' (ascending), move the value obtained in c. to the proper location in the sort key. If the VIFI-SORT-MODE = 'D' (descending), redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the VIFI-SORT-SEQUENCE.			
	NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records			

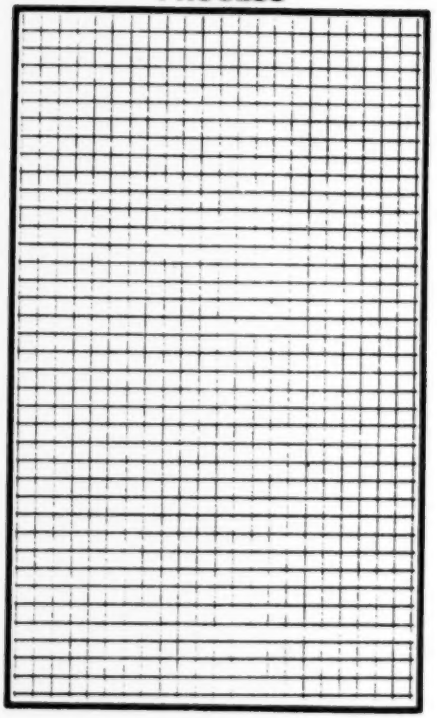
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 3 of 3
Diagram No.: 2.5.4.1.1.4 Description: Build Turbidity Maximum Contaminant Level (MCL) Violations Report File

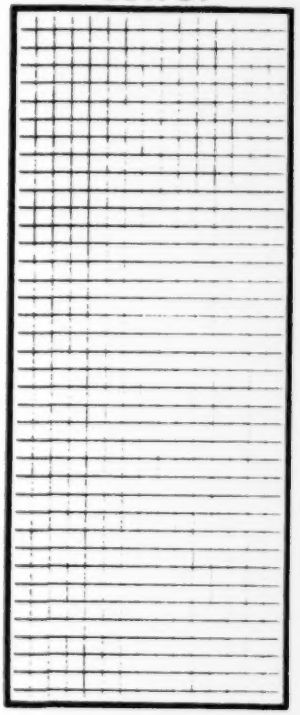
INPUT



PROCESS



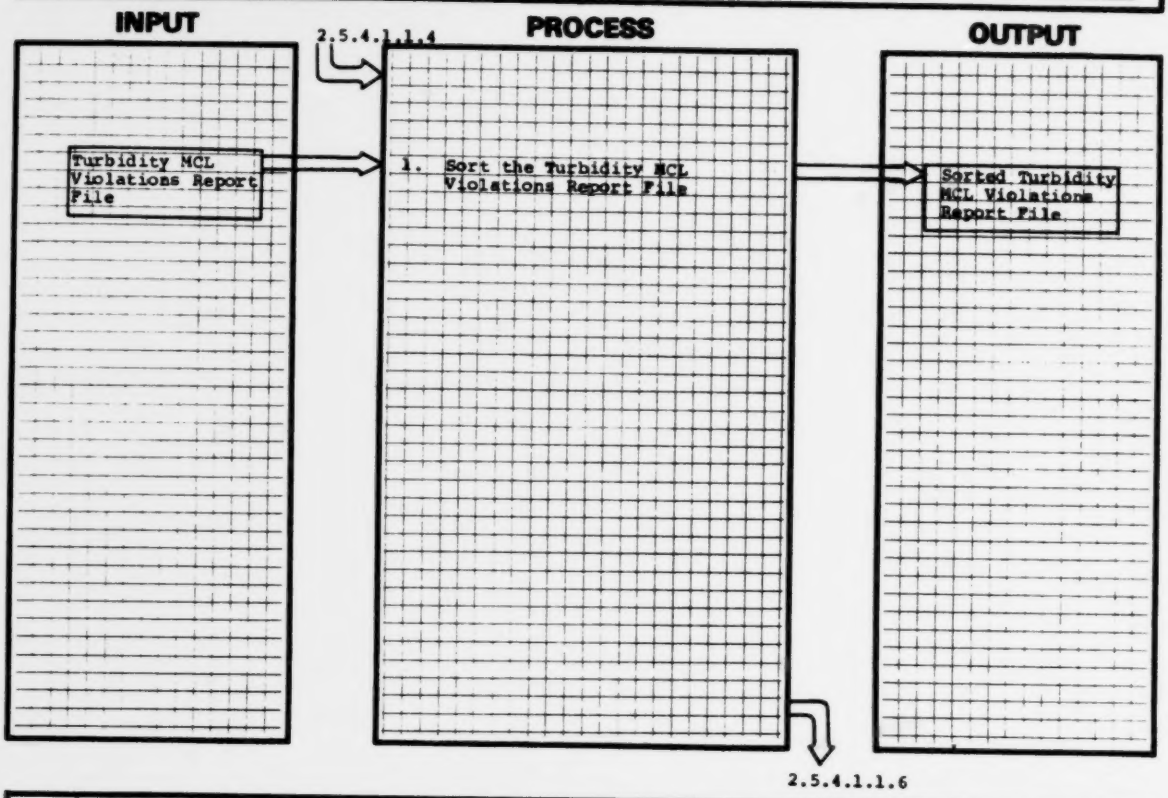
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions The first record of the Turbidity Maximum Contaminant Level (MCL) Violations File is a header record containing information to be used in the report header and is not to be used when building a sort key or in the sort. A Standard Sort Sequence Report will be produced. (See HIPO 2.5.4.1.1.6)			

MODEL STATE INFORMATION SYSTEM

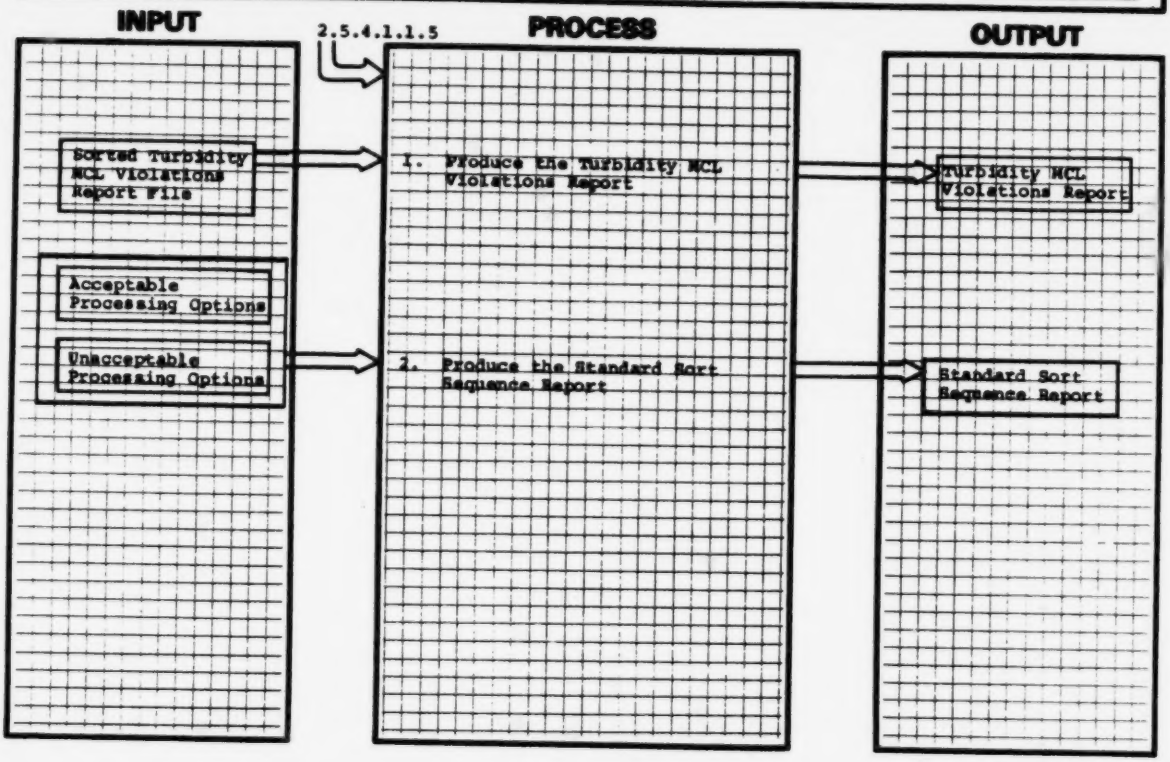
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1
Diagram No.: 2.5.4.1.1.5 **Description:** Sort Turbidity Maximum Contaminant Level (MCL) Violations Report File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Turbidity Maximum Contaminant Level (MCL) Violations Report File in ascending sequence according to the thirty position sort key.		WAQC051	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1
Diagram No.: 2.5.4.1.1.6 Description: Produce Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Turbidity Maximum Contaminant Level (MCL) Violations Report from data on the Sorted Turbidity MCL Violations Report File. The result field will be converted from absolute values to decimal values using the value in the decimal place indicator for the field. Example: If VIFI-R-MCL-VIOLATED equals 12345 and VIFI-R-MCL-VIOL-DECIMALS equals 2, then the field on the report would be printed as 123.45. Three violation records will be printed per page. The dates needed for the header will be the from and until dates and the report date saved from the header record on the Turbidity MCL Violations File. Convert all Julian dates, (YYDDD), to calendar dates, (MMDDYY), before printing.		WAQC051	308
2	Produce the Standard Sort Sequence Report. If any Processing Options errors are detected, the record image and all associated error messages are printed. Also produce the report of the Standard Sort Sequence Report.		WAQC051	MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC040
DATE: December 30, 1976

I. OBJECTIVES:

The objective of this program is to produce the Chemical Maximum Contaminant Level (MCL) Violations Report sorted in a user-defined sequence using data from the chemical MCL Violations File.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Chemical Maximum Contaminant Level Violations File	VIFI-HEDR-RPT-RECORD VIFI-M-RPT-RECORD	WAQC.213 WAQC.216
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layout:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Chemical MCL Violations Report	WAQC.306
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

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C. Turnaround Documents:

Not Applicable

IV FUNCTIONS:

1. Verify that the Chemical MCL Violations File Header Record contains a valid processing date or '000000'. If '000000', this indicates that processing is to be terminated without report production.

2. Build an internal Data Element Table (DET) from the DFT.

3. Edit the 'SORT' Processing Options for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name, and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Chemical MCL Violations Report File by constructing sort keys using the 'SORT' Processing Options and the Chemical MCL Compliance Violations File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Chemical MCL Violations File.

5. Sort the Chemical MCL Compliance Violations Report File from Step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Chemical MCL Violations Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Sort Options

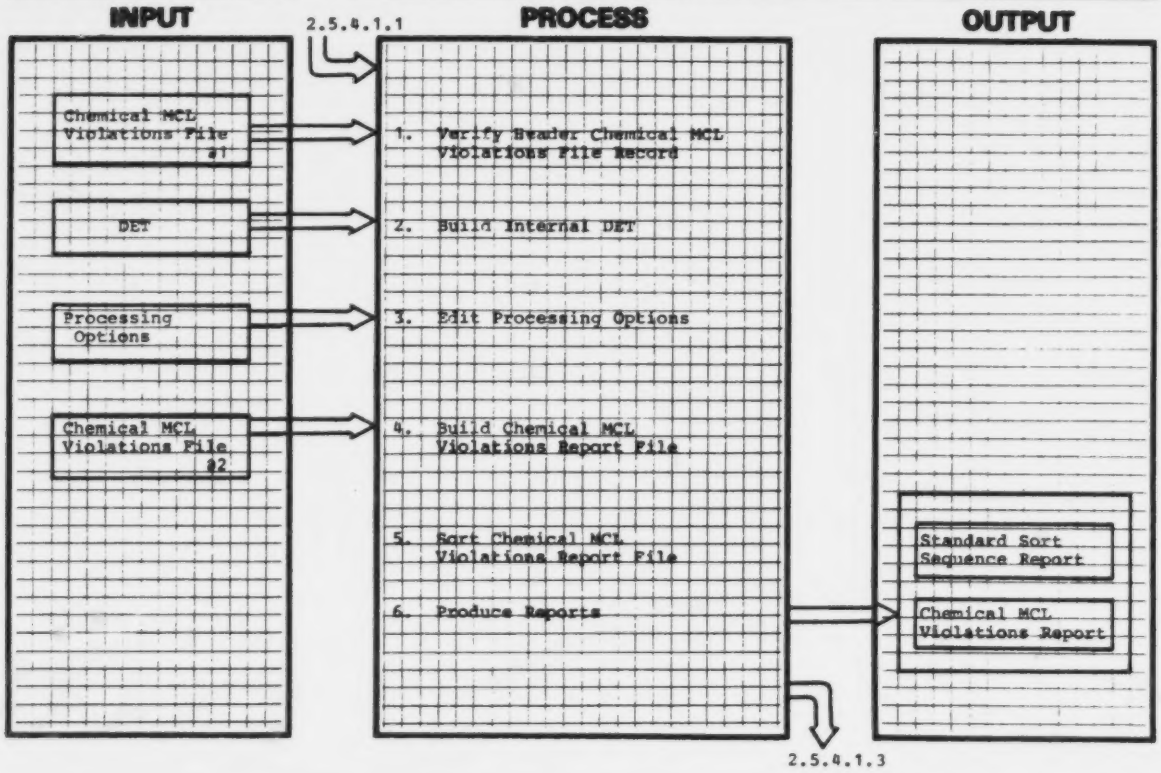
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12-10-76 **Page:** 1 of 1

Diagram No.: 2.5.4.1.2 **Description:** Produce Chemical MCL Violations Report

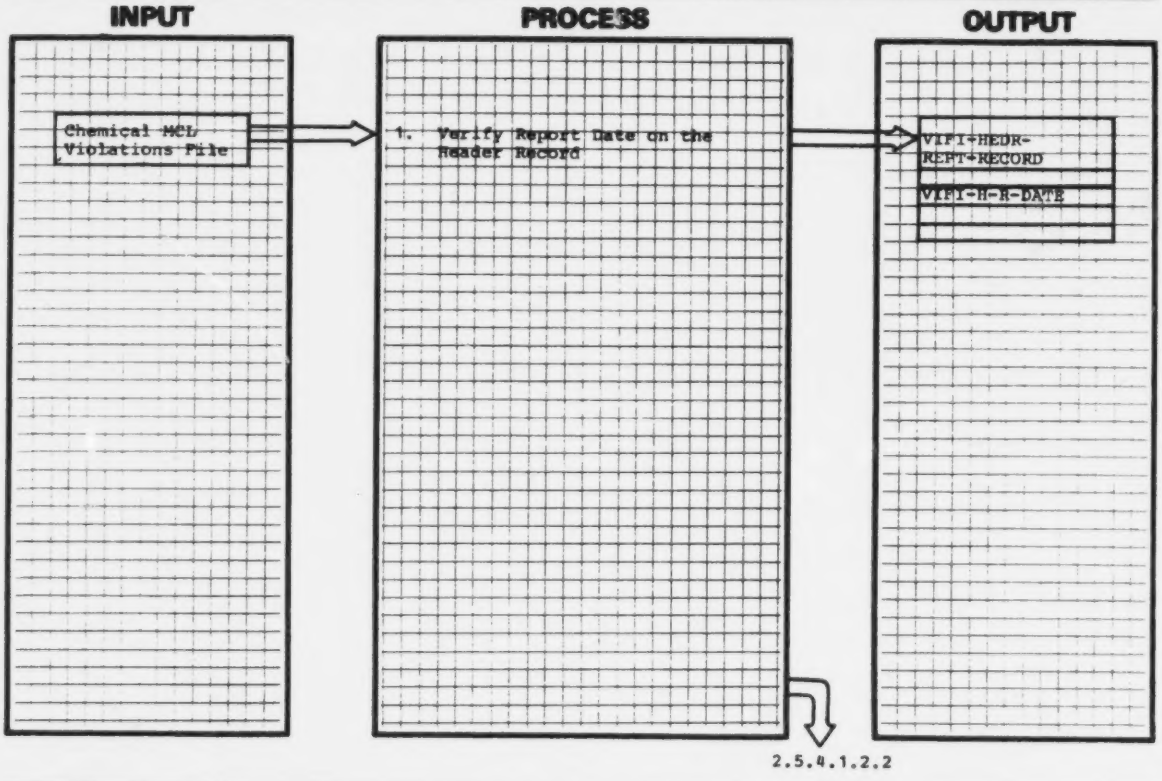


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header Chemical MCL Violations File Record to ensure that processing is to continue.	2.5.4.1.2.1	WAQC040	
2	Build an Internal Data Element Table (DET) from the DET.	2.5.4.1.2.2	WAQC040	
3	Edit the 'SORT' Processing Options. If any Processing Options are in error, processing will be terminated.	2.5.4.1.2.3	WAQC040	
4	Build the Chemical MCL Violations Report File from the Chemical MCL Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 2. If there are no 'SORT' Processing Options, the sort key is built sequentially.	2.5.4.1.2.4	WAQC040	
5	Sort the Chemical MCL Violations Report File by a user-defined sequence specified by the 'SORT' Processing Options or by the sequentially created sort key.	2.5.4.1.2.5	WAQC040	
6	Produce the Chemical MCL Violations Report by printing data from the sorted Chemical MCL Violations Report File. Produce the Standard Sort Sequence Report which will contain either the sort sequence report or the Processing Options errors.	2.5.4.1.2.6	WAQC040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12-10-76 **Page:** 1 of 1

Diagram No.: 2.5.4.1.2.1 **Description:** Verify Header Chemical MCL Violations File Record

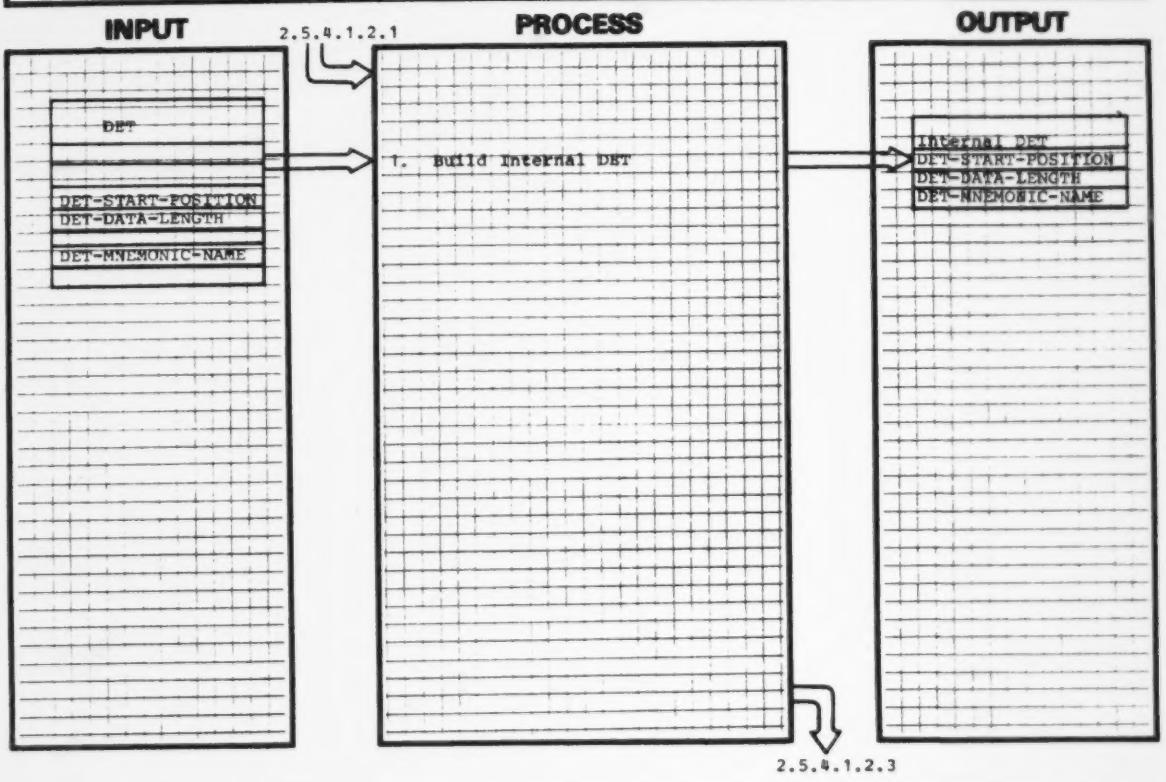


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Chemical Maximum Contaminant Level (MCL) Violations File is written during execution of program WAQC033 and carries information from the 'PROC' record processed by program WAQC025. If, for any reason, WAQC033 terminated abnormally the field VIFI-H-R-DATE will contain '000000' signifying that this processing is to also terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for 'LOW VALUES'.		WAQC040	213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12-10-76 **Page:** 1 **of** 1

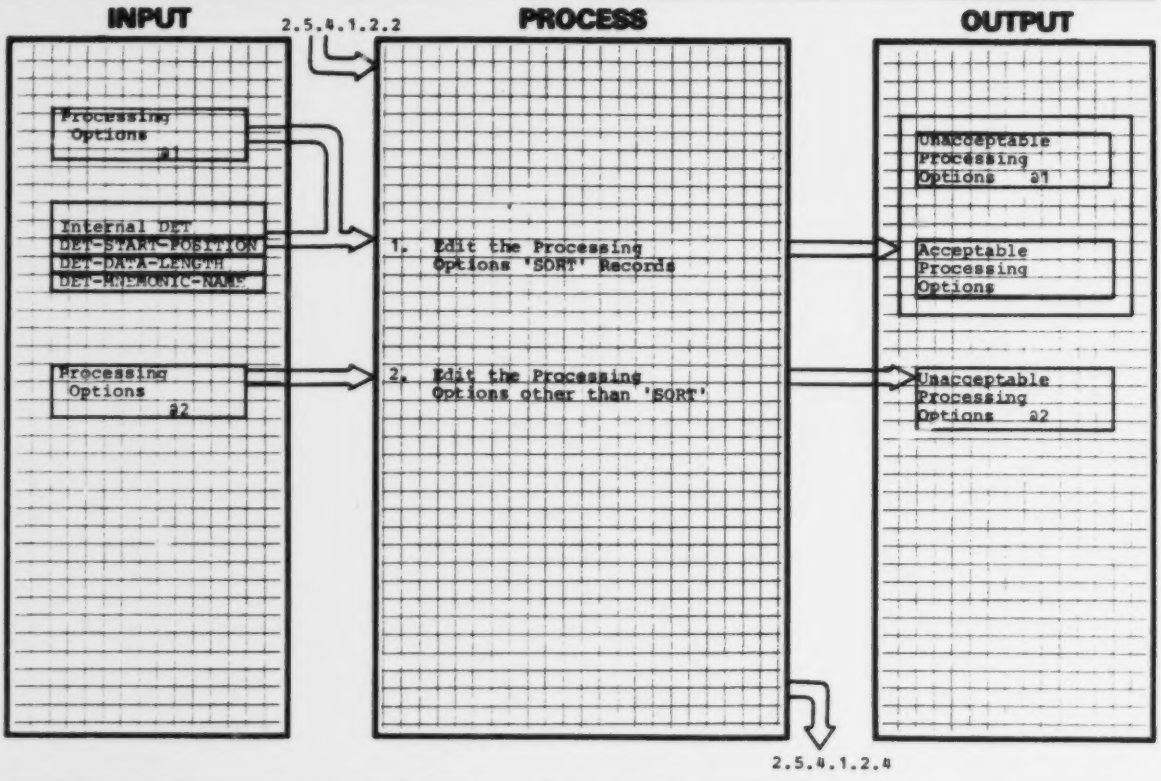
Diagram No.: 2.5.4.1.2.2 **Description:** Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of VI. Only the file start position, data element length and data element mnemonic are used. The records are used to build the sort field of the sort key.		WAQC040	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12-10-76 **Page:** 1 of 1
Diagram No.: 2.5.4.1.2.3 **Description:** Edit Processing Options

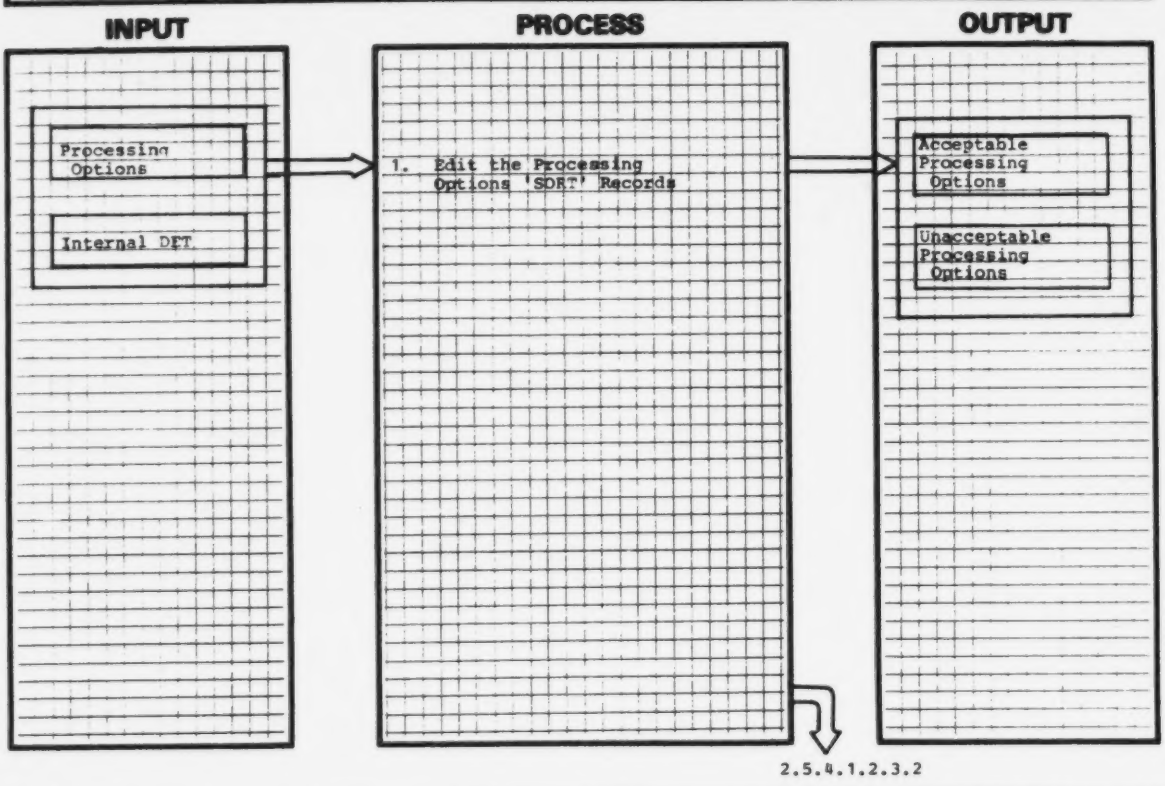


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'SORT' in positions 1-4.	2.5.4.1. 2.3.1	WAQC040	
2	Edit for Processing Options other than 'SORT'. If found, it is an error. NOTE: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.	2.5.4.1. 2.3.2	WAQC040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12-10-76 **Page:** 1 **of** 1

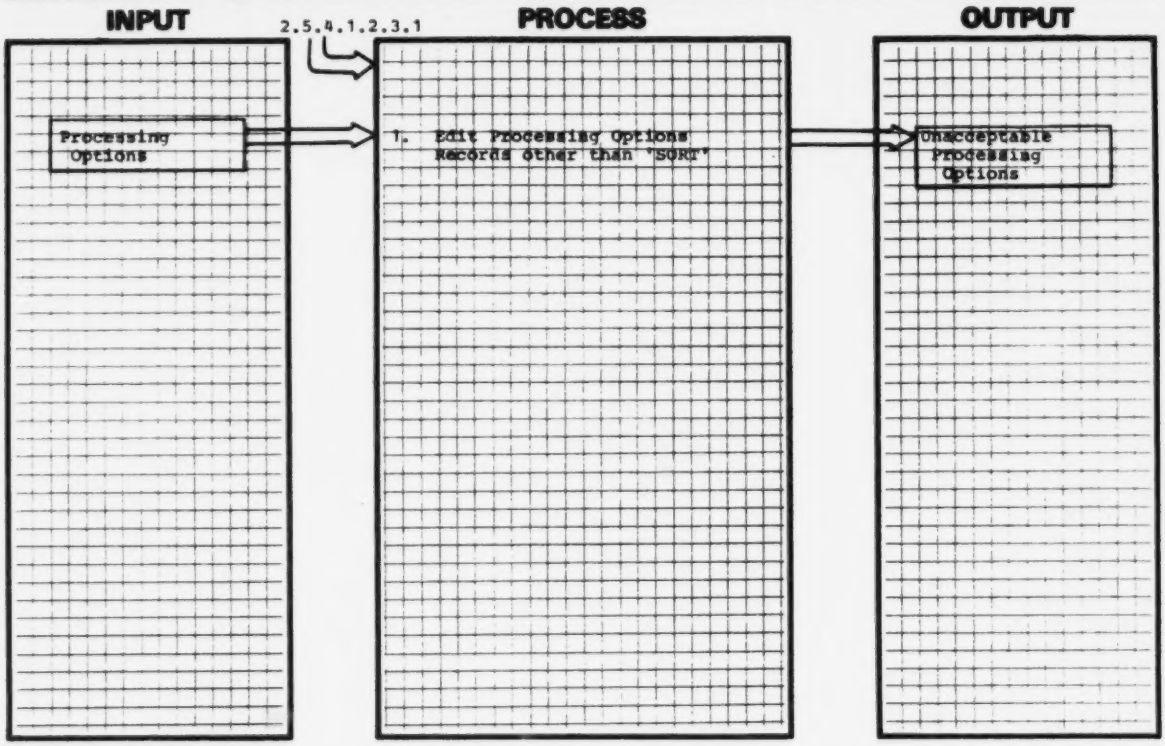
Diagram No.: 2.5.4.1.2.3.1 **Description:** Edit the Processing Options 'SORT' Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Chemical MCL Violations Report and processing will be terminated.		WAQC040	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12-10-76 **Page:** 1 of 1
Diagram No.: 2.5.4.1.2.3.2 **Description:** Edit the Processing Options Other than 'SORT'

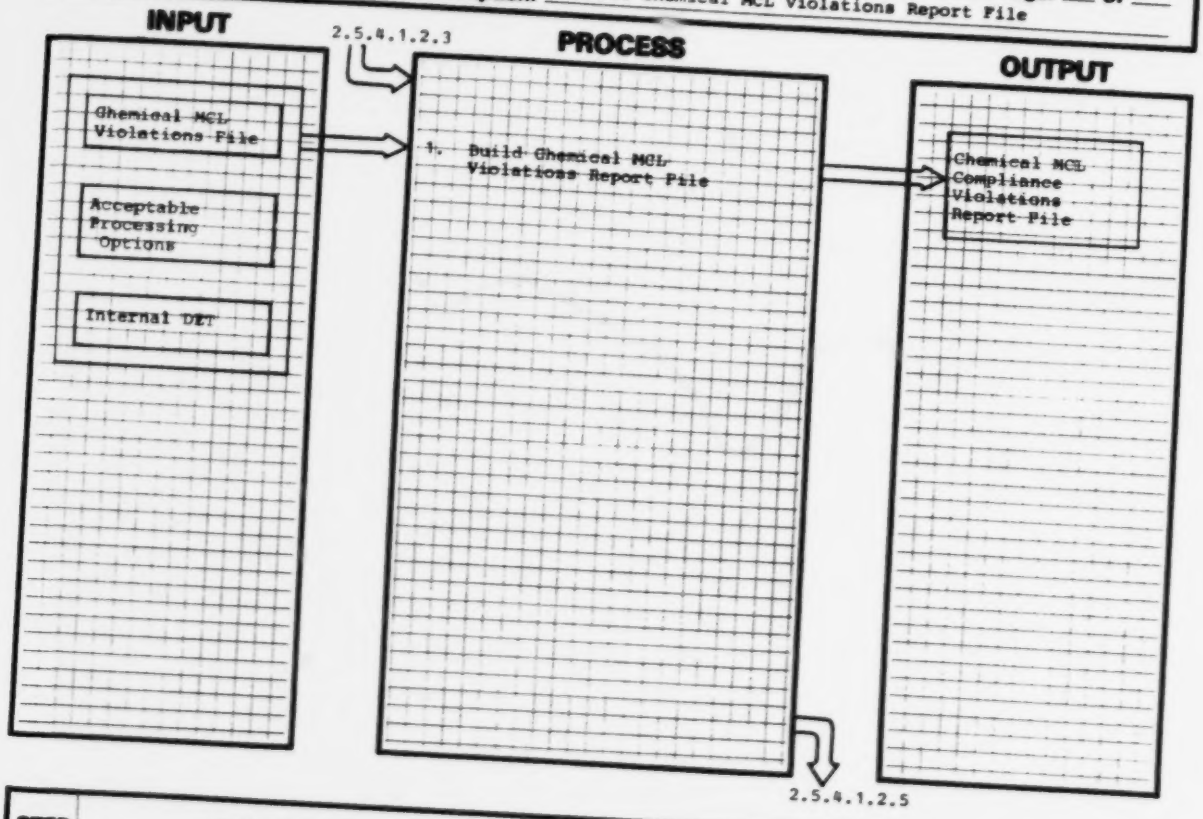


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing will be terminated.		WAQC040	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail | Subsystem: Water Quality Compliance | Date: 12-10-76 | Page: 1 of 2

Diagram No.: 2.5.4.1.2.4 | Description: Build Chemical MCL Violations Report File



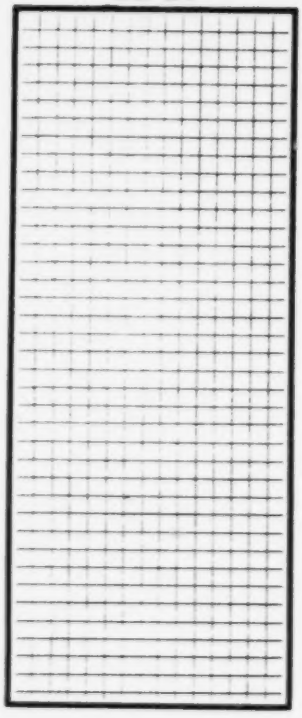
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Build a sort key with a maximum length of 30 positions for each record on the Chemical MCL Violations File based on the criteria on the 'SORT' Options records as follows:		WAQC040	213 216 MSIS. 201
	a. Redefined the entire (or if array: non-variable portion of the) Chemical MCL Violations File record as an array of one character values.			
	b. Match the VIFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows:			
	(1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Chemical MCL Violations File.			
	(2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Chemical MCL Violations File.			
	c. In order to obtain a value to be used in building the sort key, one of the following is done:			
	(1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000			
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows:			

MODEL STATE INFORMATION SYSTEM

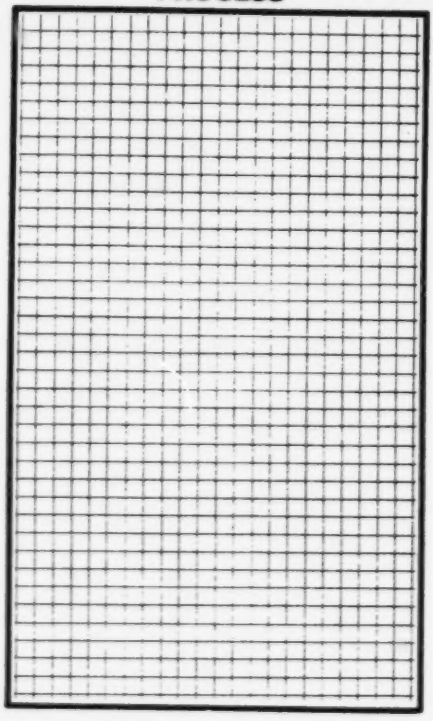
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 12-10-76 Page: 2 of 2

Diagram No.: 2.5.4.1.2.4 Description: Build Chemical MCL Violations Report File

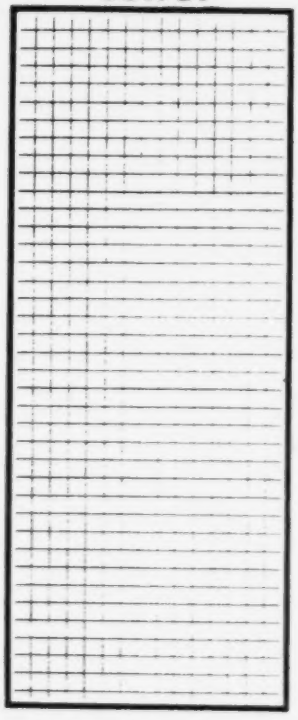
INPUT



PROCESS



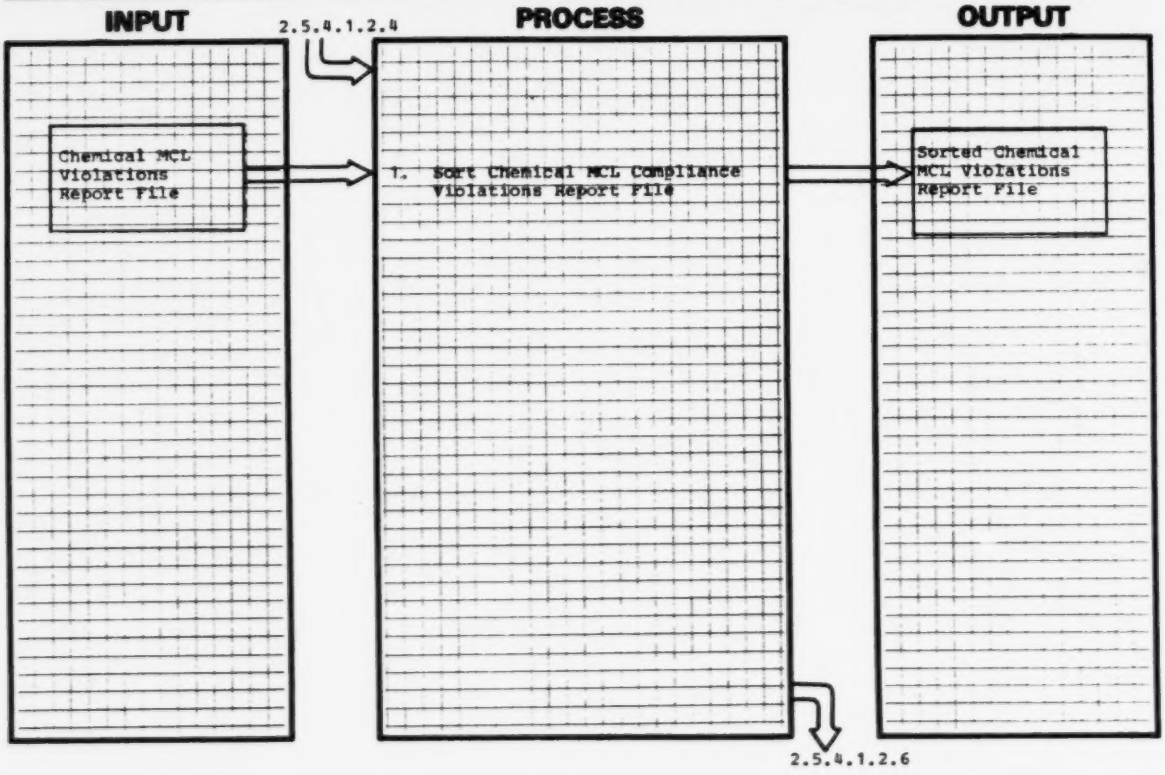
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(a) If the VIFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the VIFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the VIFI-SORT-MODE = "A" (ascending) move the value obtained in c. to the proper location in the sort key. If the VIFI-SORT-MODE = "D" (descending) redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the VIFI-SORT-SEQUENCE. NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12-10-76 **Page:** 1 **of** 1
Diagram No.: 2.5.4.1.2.5 **Description:** Sort Chemical MCL Violations Report File

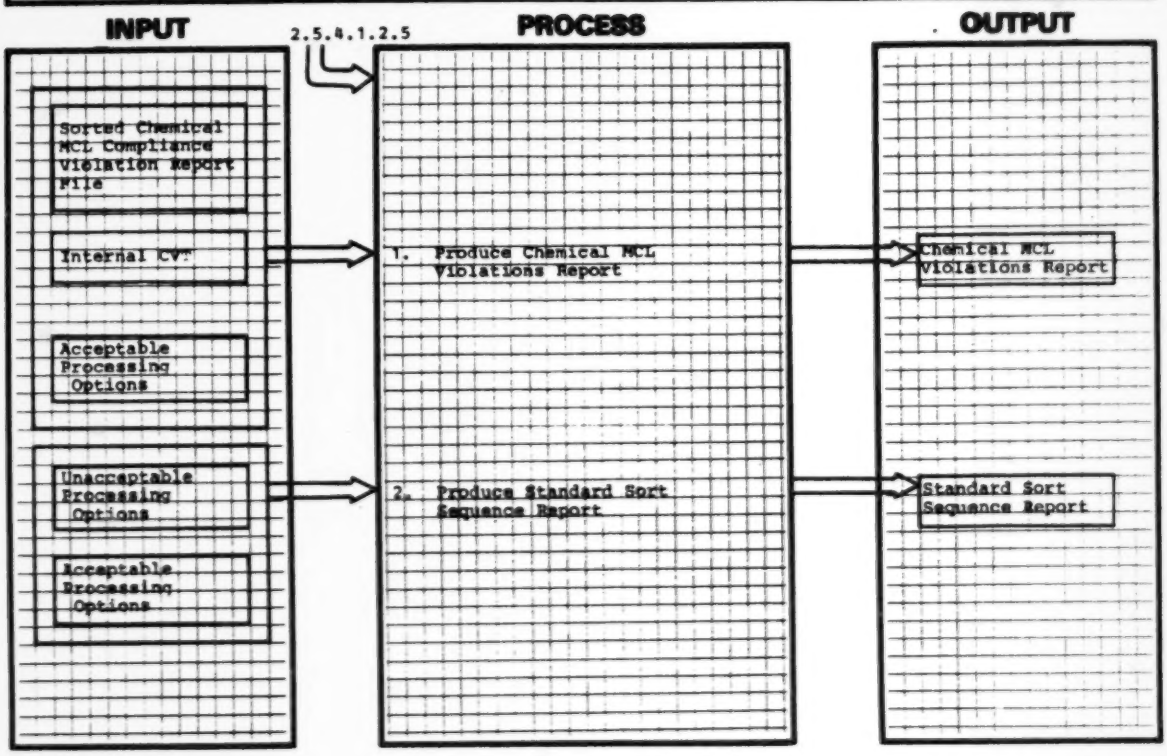


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Chemical MCL Compliance Violations File in ascending sequence according to the thirty position sort key.		WAQC040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12-10-76 **Page:** 1 of 1

Diagram No.: 2.5.4.1.2.6 **Description:** Produce Chemical MCL Violations Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Chemical MCL Violations Report from data on the Sorted Chemical MCL Compliance Violations Report File. Contaminant name will be found on the Internal Code Value Table (CVT). The result fields will be edited for the appropriate decimal placement on the report. Four violation records will be printed per page.		WAQC040	WAQC. 306
2	Produce the Standard Sort Sequence Report. If any processing errors occurred, the record image and all associated error messages are printed, otherwise print only the report of the sort sequence.		WAQC040	MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC050
DATE: 1-20-77

I. OBJECTIVES:

The objective of this program is to produce the Bacteriological Maximum Contaminant Level (MCL) Violations Report sorted in a user-defined sequence using data from the Bacteriological MCL Violations File.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Bacteriological Maximum Contaminant Level (MCL) Violations File	VIFI-HEDR-REPT-RECORD VIFI-M-REPT-RECORD	WAQC.213 WAQC.216
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layout:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Bacteriological MCL Violations Report	WAQC.307
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify that the Header Bacteriological MCL Violations File Record contains a valid processing date or '000000'. If '000000' it indicates that processing is to be terminated without report production.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the 'SORT' Processing Options records for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name, and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Bacteriological Maximum Contaminant Level (MCL) Violations Report File by constructing sort keys using the 'SORT' Processing Options and the Bacteriological MCL Violations File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Bacteriological MCL Violations File.

5. Sort the Bacteriological MCL Violations Report File from step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Bacteriological MCL Violations Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

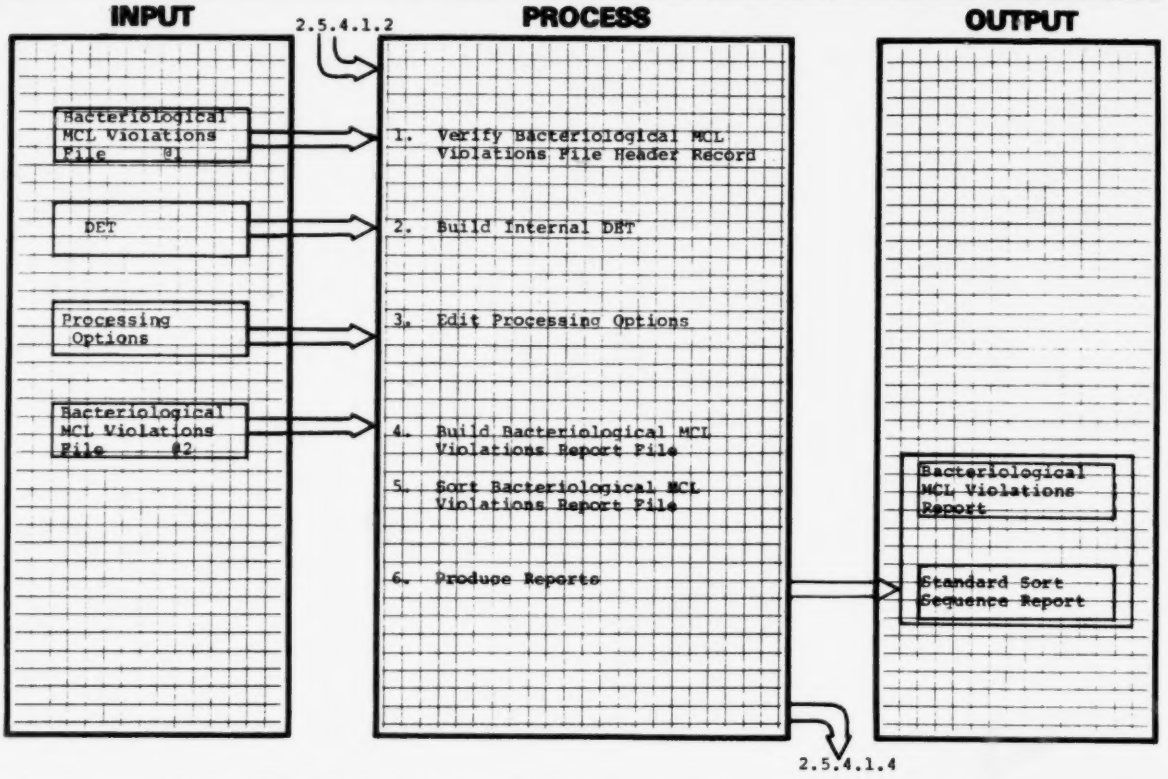
1. Sort Options

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 of 1
Diagram No.: 2.5.4.1.3 **Description:** Produce Bacteriological MCL Violations Report

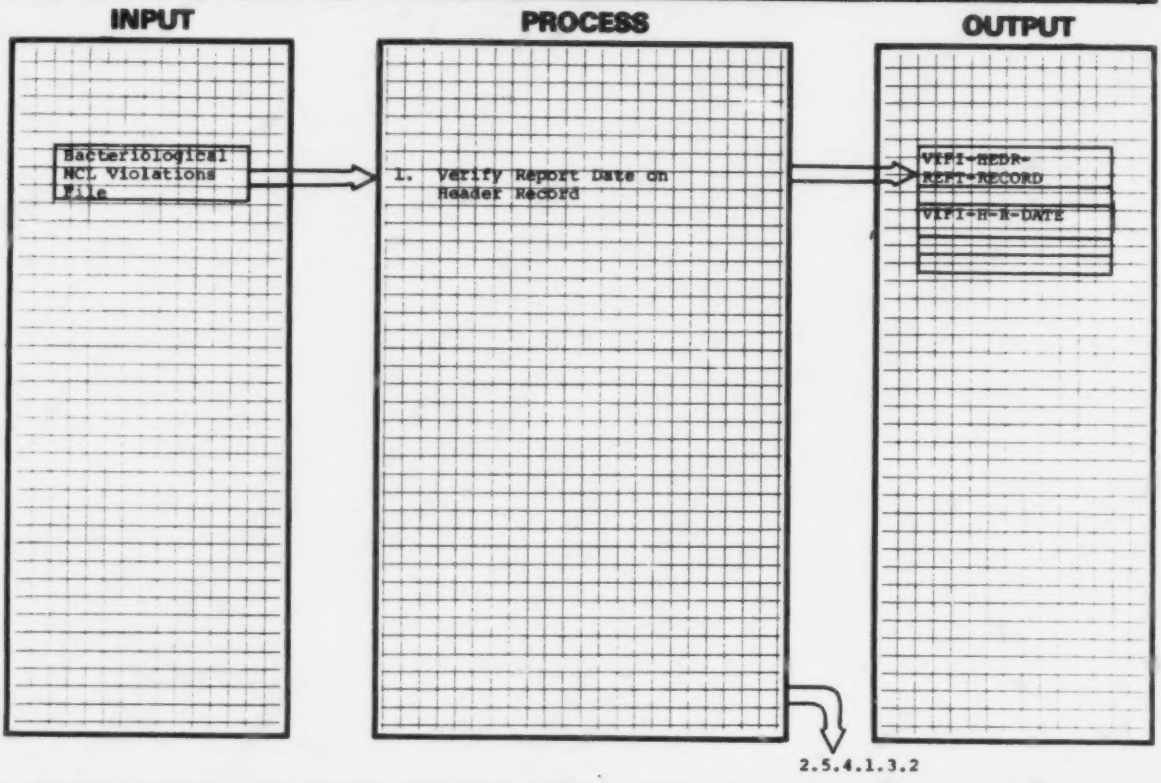


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Bacteriological Maximum Contaminant Level (MCL) Violations File Header Record to ensure that processing is to continue.	2.5.4.1.3.1	WAQC050	
2	Build an internal Data Element Table (DET) from the DET.	2.5.4.1.3.2	WAQC050	
3	Edit the 'SORT' Processing Options records. If any Processing Options are in error, processing will be terminated.	2.5.4.1.3.3	WAQC050	
4	Build the Bacteriological Maximum Contaminant Level (MCL) Violations Report File from the Bacteriological MCL Violations File by addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in step 2. If there are no 'SORT' Processing Options records, the sort key is built sequentially.	2.5.4.1.3.4	WAQC050	
5	Sort the Bacteriological MCL Violations Report File by a user-defined sequence specified by the 'SORT' Processing Options or by the sequentially created sort key.	2.5.4.1.3.5	WAQC050	
6	Produce the Bacteriological MCL Violations Report by printing data from the sorted Bacteriological MCL Violations Report File. Produce the Standard Sort Sequence Report which will contain either the sort sequence report or the Processing Options errors.	2.5.4.1.3.6	WAQC050	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 1 of 1

Diagram No.: 2.5.4.1.3.1 Description: Verify Bacteriological MCL Violations File Header Record

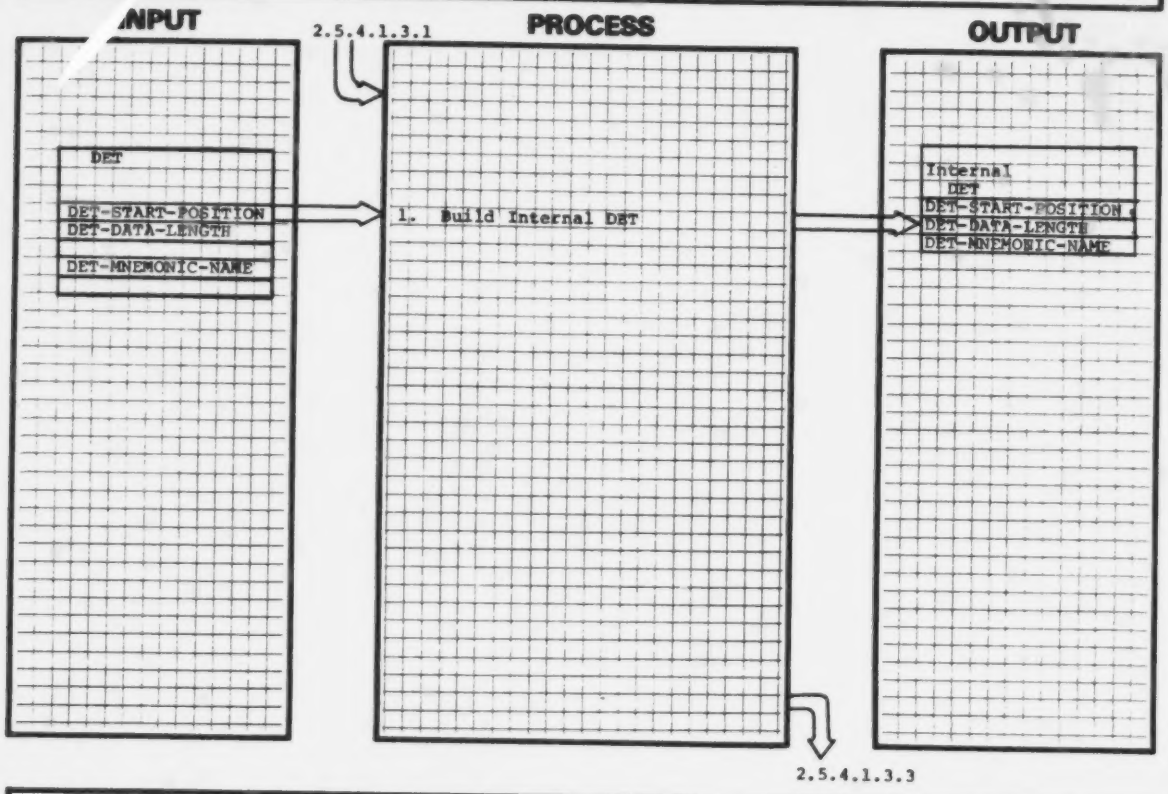


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Bacteriological Maximum Contaminant Level (MCL) Violations File is written during execution of program WAQC034 and carries information from the 'PROC' record processed by program WAQC025. If, for any reason, WAQC034 terminated abnormally the field VIFI-H-R-DATE will contain '000000' signifying that this processing is to also terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for "LOW VALUES."		WAQC050	213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 1 of 1

Diagram No.: 2.5.4.1.3.2 Description: Build Internal DET

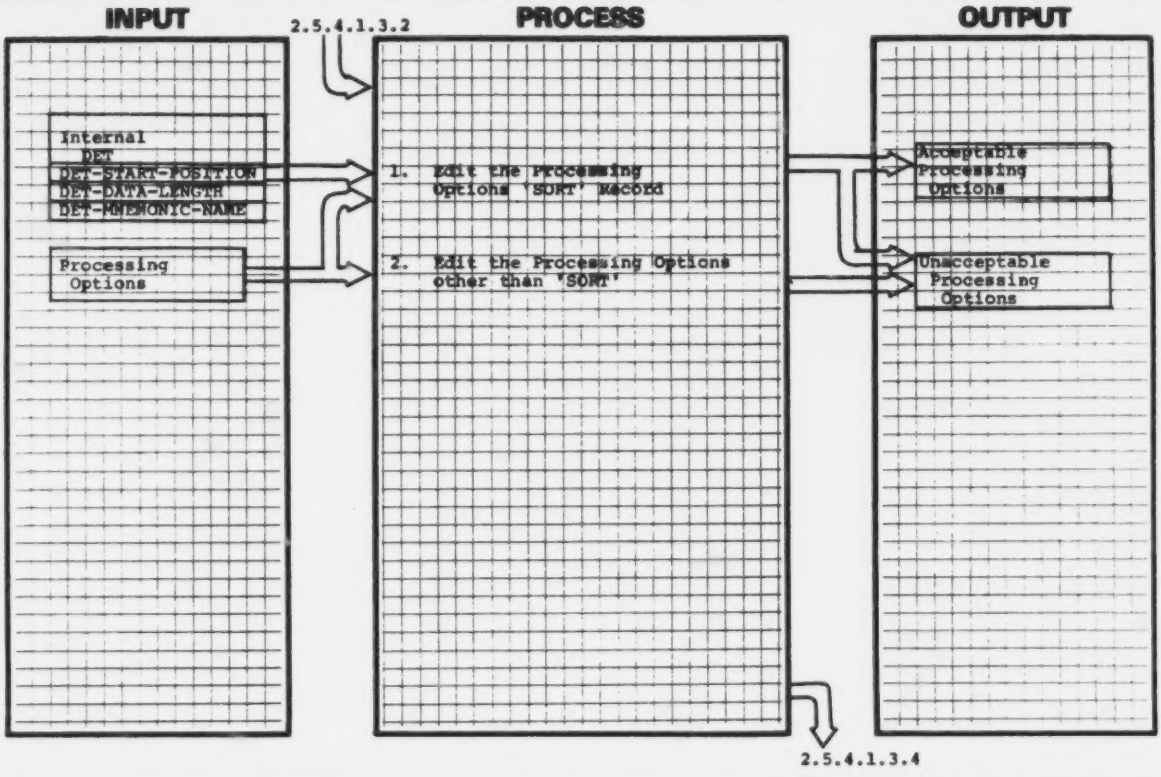


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of VI. Only the file start position, data element length, and data element mnemonic are used.		WAQC050	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 1-20-77 Page: 1 of 1

Diagram No.: 2.5.4.1.3.3 Description: Edit Processing Options

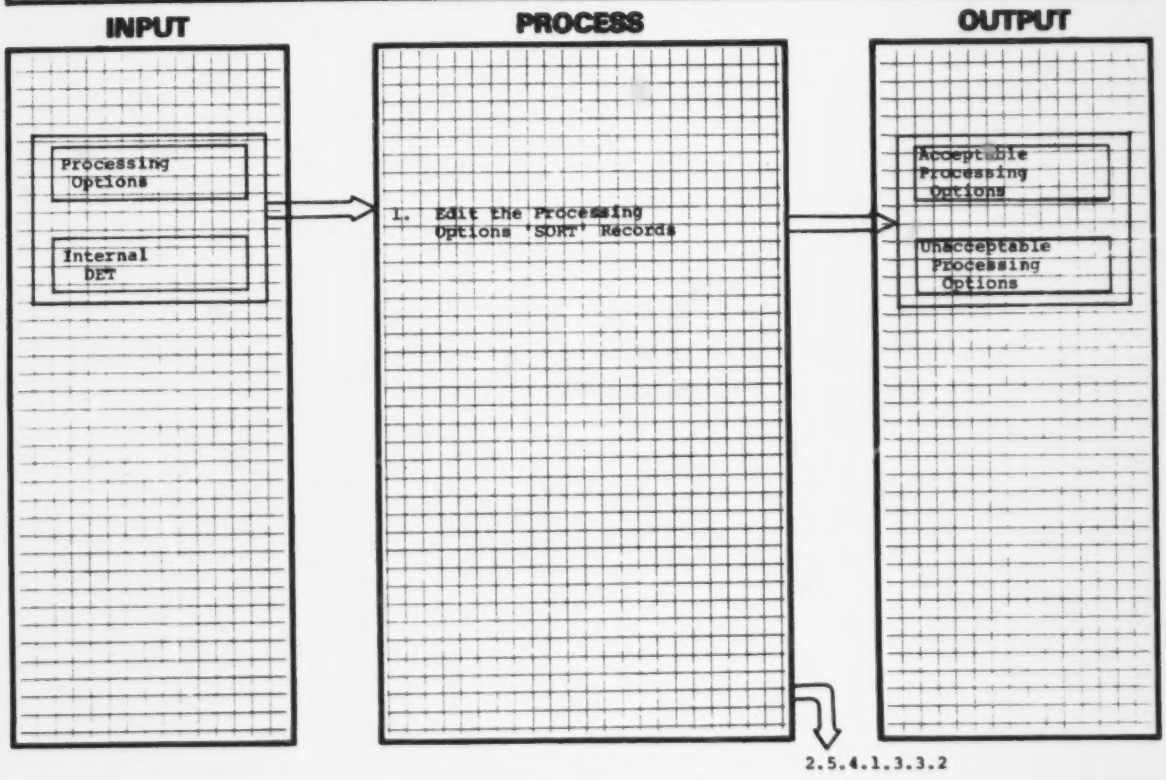


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) with 'SORT' in positions 1-4.	2.5.4.1. 3.3.1	WAQC050	
2	Edit for Processing Options other than 'SORT'. If found, it is an error. NOTE: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.	2.5.4.1. 3.3.2	WAQC050	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 **of** 1

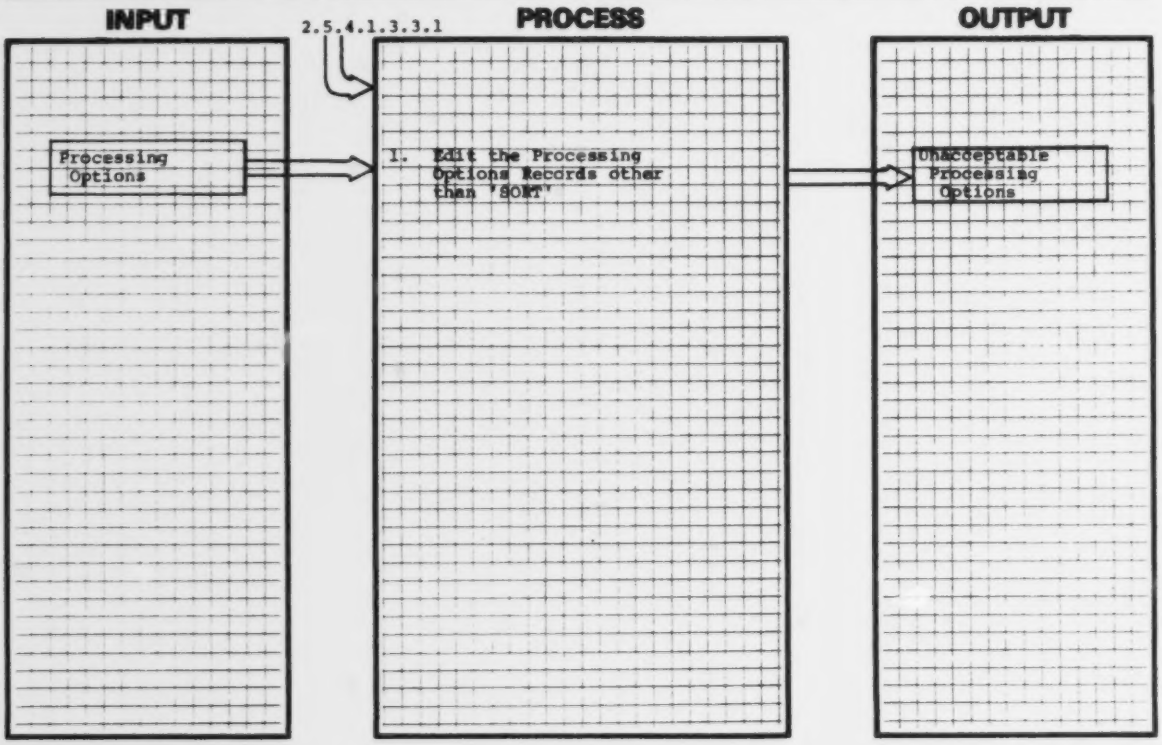
Diagram No.: 2.5.4.1.3.3.1 **Description:** Edit the Processing Options 'SORT' Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		INPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC050	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 of 1
Diagram No.: 2.5.4.1.3.2 **Description:** Edit the Processing Options other than 'SORT'

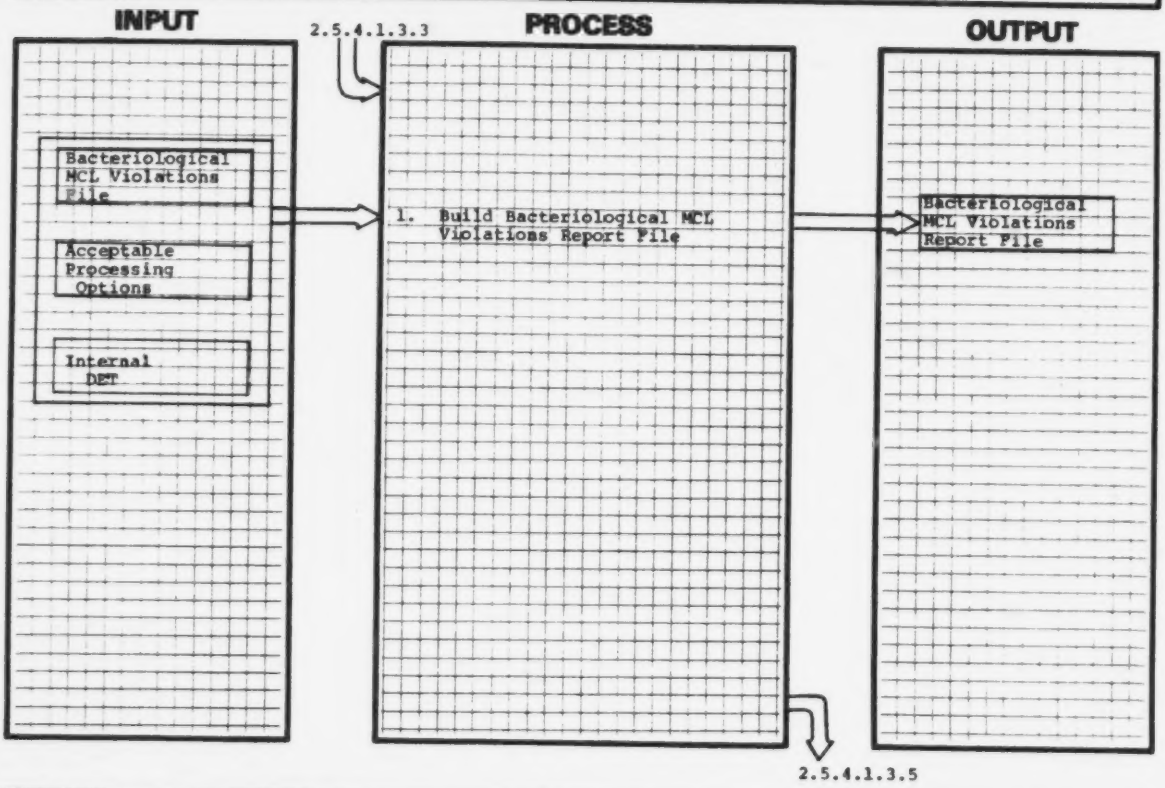


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing will be terminated.		WAQC050	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 **of** 3

Diagram No.: 2.5.4.1.3.4 **Description:** Build Bacteriological MCL Violations Report File

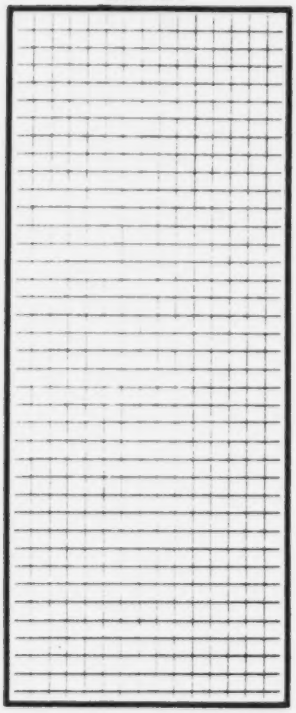


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Bacteriological Maximum Contaminant Level (MCL) Violations File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Bacteriological MCL Violations File record as an array of one character values. b. Match the VIFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Bacteriological MCL Violations File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Bacteriological MCL Violations File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric filed from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 00123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		WAQC050	211 216 212 MSIS. 201

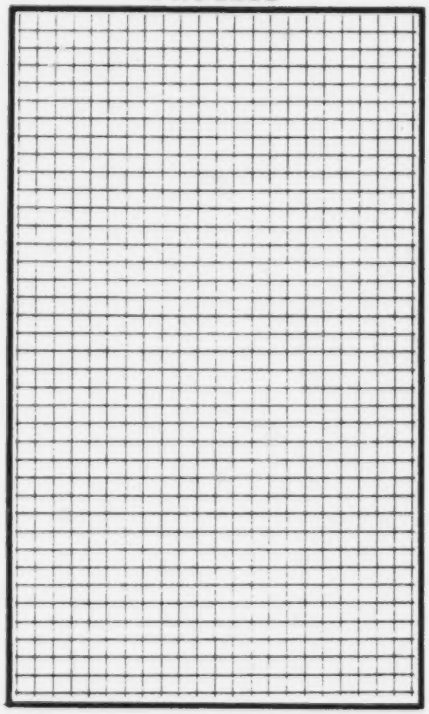
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 2 of 3
Diagram No.: 2.5.4.1.3.4 Description: Build Bacteriological MCL Violations Report File

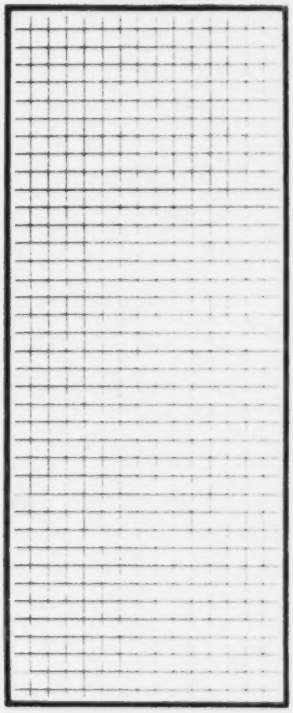
INPUT



PROCESS



OUTPUT



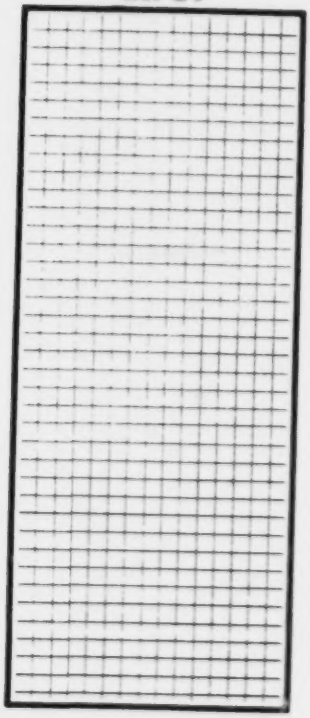
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows: (a) If the VIFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the VIFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the VIFI-SORT-MODE = "A" (ascending) move the value obtained in c. to the proper location in the sort key. If the VIFI-SORT-MODE = "D" redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the VIFI-SORT-SEQUENCE.			

MODEL STATE INFORMATION SYSTEM

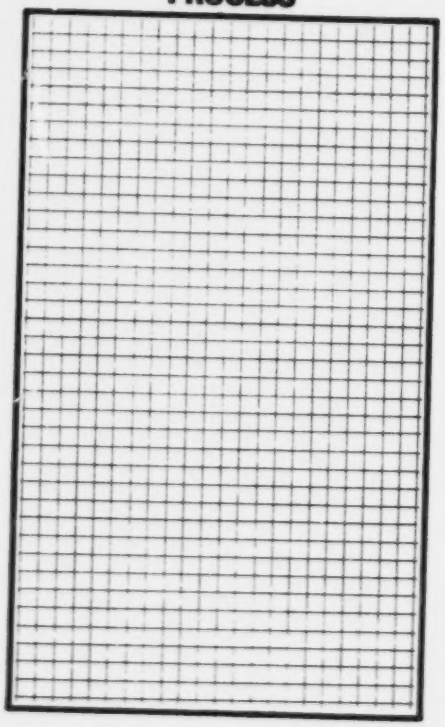
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 3 of 3

Diagram No.: 2.5.4.1.3.4 Description: Build Bacteriological MCL Violations Report File

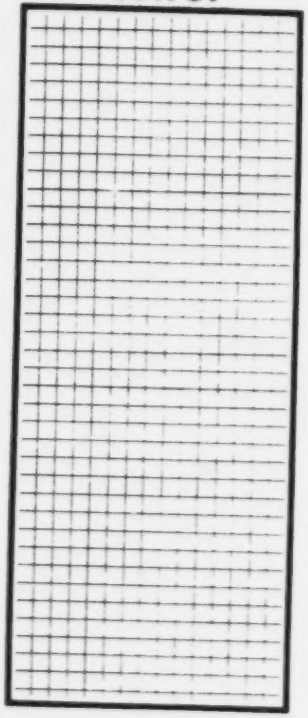
INPUT



PROCESS



OUTPUT

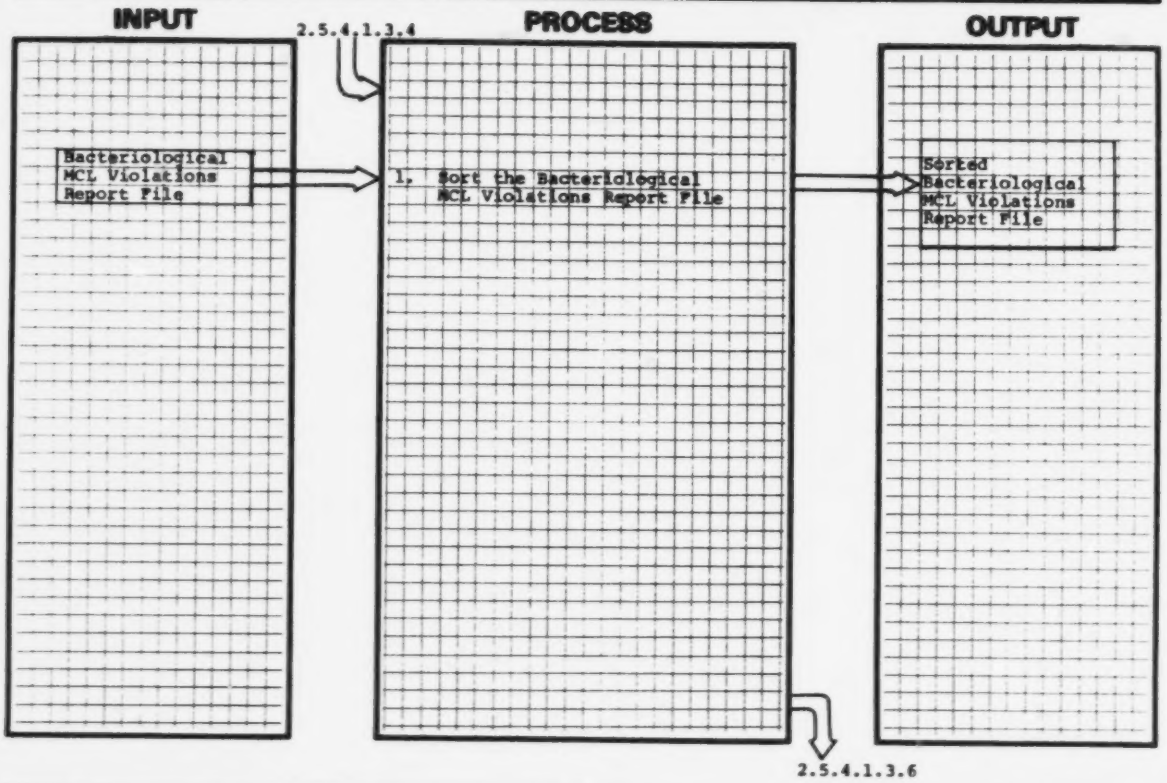


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000000099999 30 positions The first record of the Bacteriological Maximum Contaminant Level (MCL) Violations File is a header record containing information to be used in the Report header and is not to be used when building a sort key or in the sort. A Standard Sort Sequence Report will also be produced (See HIPO 2.5.4.1.3.6)			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 1 of 1

Diagram No.: 2.5.4.1.3.5 Description: Sort Bacteriological MCL Violations Report File

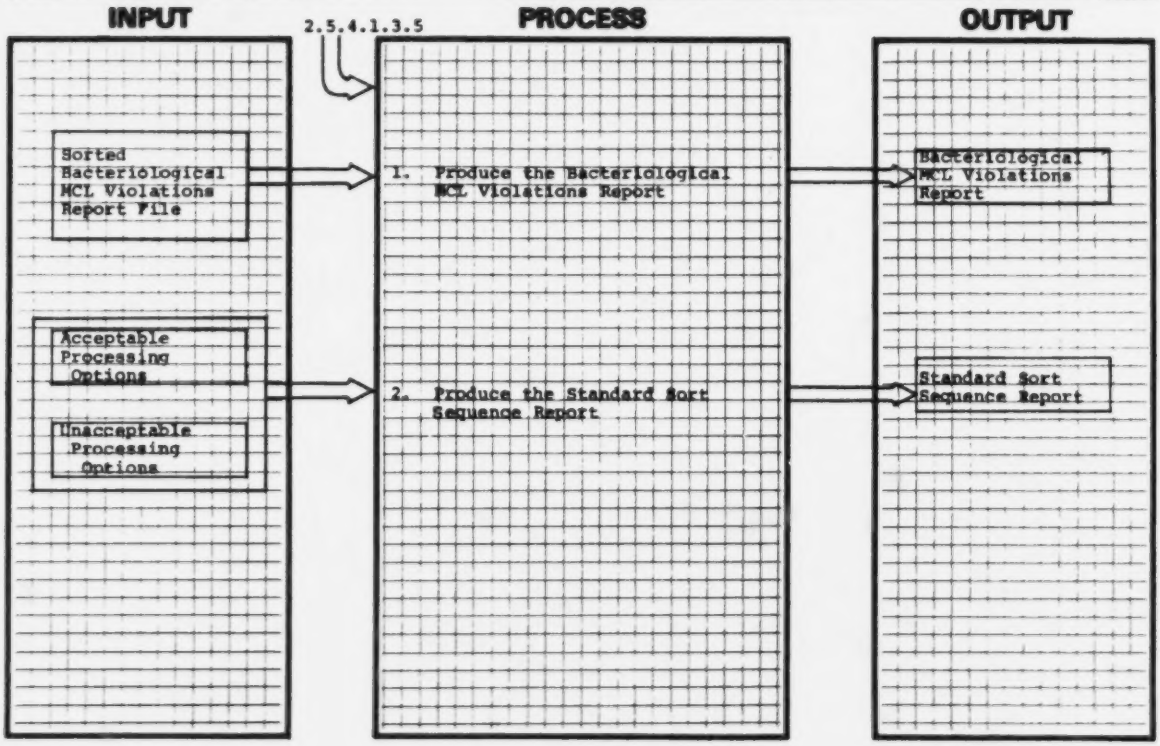


STEP	EXTENDED DESCRIPTION	REFERENCES		
		INPO	PROGRAM	OTHER
1	Sort the Bacteriological Maximum Contaminant Level (MCL) Violations Report File in ascending sequence according to the thirty position sort key.		WAQC050	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 of 1

Diagram No.: 2.5.4.1.3.6 **Description:** Produce Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Bacteriological Maximum Contaminant Level (MCL) Violations Report from data on the Sorted Bacteriological MCL Violations Report File. The result field will be converted from absolute values to decimal values using the value in the decimal place indicator for the field. Example: If VIFI-M-MCL-VIOLATED equals 12345 and VIFI-M-MCL-VIOL-DECIMALS equals 2, then the field on the report would be printed as 123.45. Three violation records will be printed per page. The dates needed for the header will be the from and until dates and the report date saved from the header record on the Bacteriological MCL Violations File. Convert all Julian dates (YYDDD) to calendar dates (MMDDYY) before printing.		WAQC050	216 307
2	Produce the Standard Sort Sequence Report. If any Processing Options error messages are encountered, the record images and all associated error messages are printed. Also produce the Standard Sort Sequence Report.		WAQC050	MSIS. 309 MSIS. 311

NARRATIVE

SUBYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC041
DATE: November 3, 1976

I. OBJECTIVES:

The objective of this program is to produce the Radiological Maximum Contaminant Level (MCL) Violations Report sorted in a user-defined sequence using data from the Radiological MCL Violations File.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Radiological Maximum Contaminant Level Violations File	VIFI-HEDR-REPT-RECORD	WAQC.213
		VIFI-M-REPT-RECORD	WAQC.216
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layouts:

Not applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Radiological MCL Violations Report	WAQC.309

2. Standard Sort Sequence Report — MSIS.309 MSIS.311

C. Turnaround Documents:

Not applicable

IV. FUNCTIONS:

1. Verify that the Radiological MCL Violations File Header Record contains a valid processing date or '000000'. If '000000', this indicates that processing is to be terminated without report production.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the 'SORT' Processing Options for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name, and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Radiological MCL Violations Report File by constructing sort keys using the 'SORT' Processing Options and the Radiological MCL Violations File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Radiological MCL Violations File.

5. Sort the Radiological MCL Compliance Violations Report File from Step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Radiological MCL Violations Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Sort options

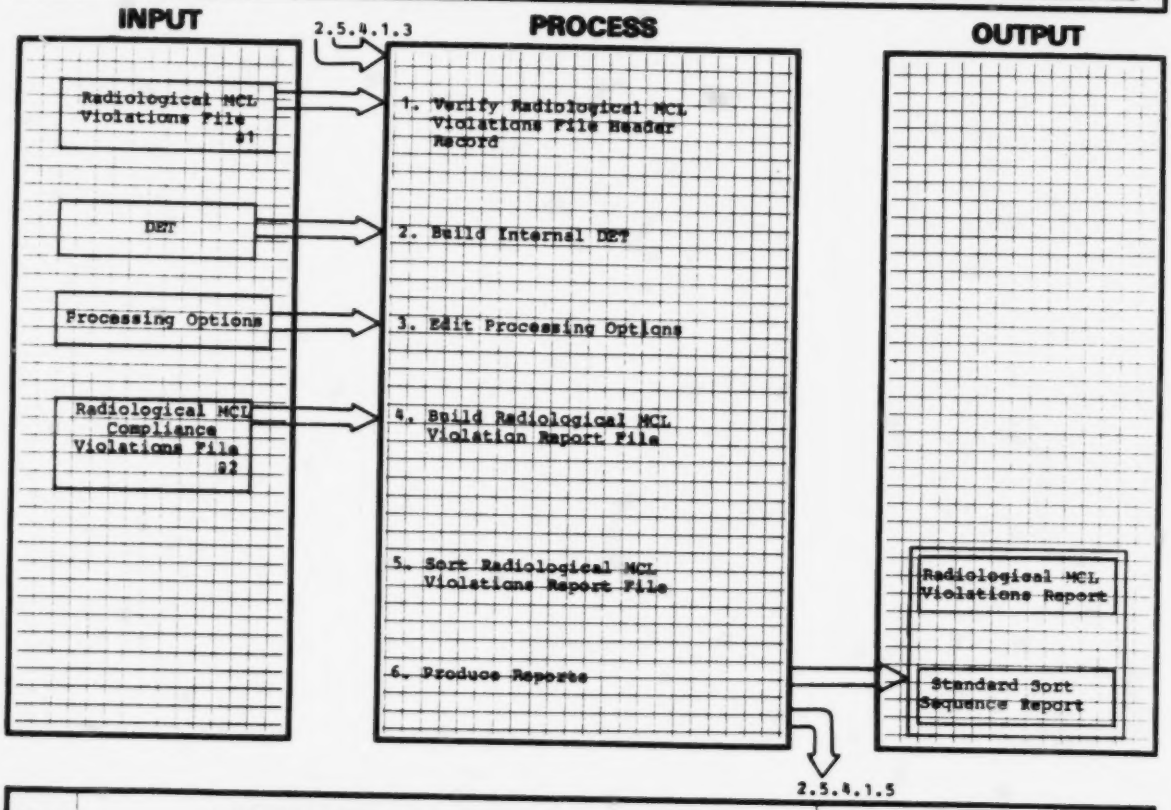
B. Data Element Descriptions:

Not applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 1-13-77 **Page:** 1 of 1

Diagram No.: 2.5.4.1.4 **Description:** Produce Radiological Max. Contam. Level Violations Rept.

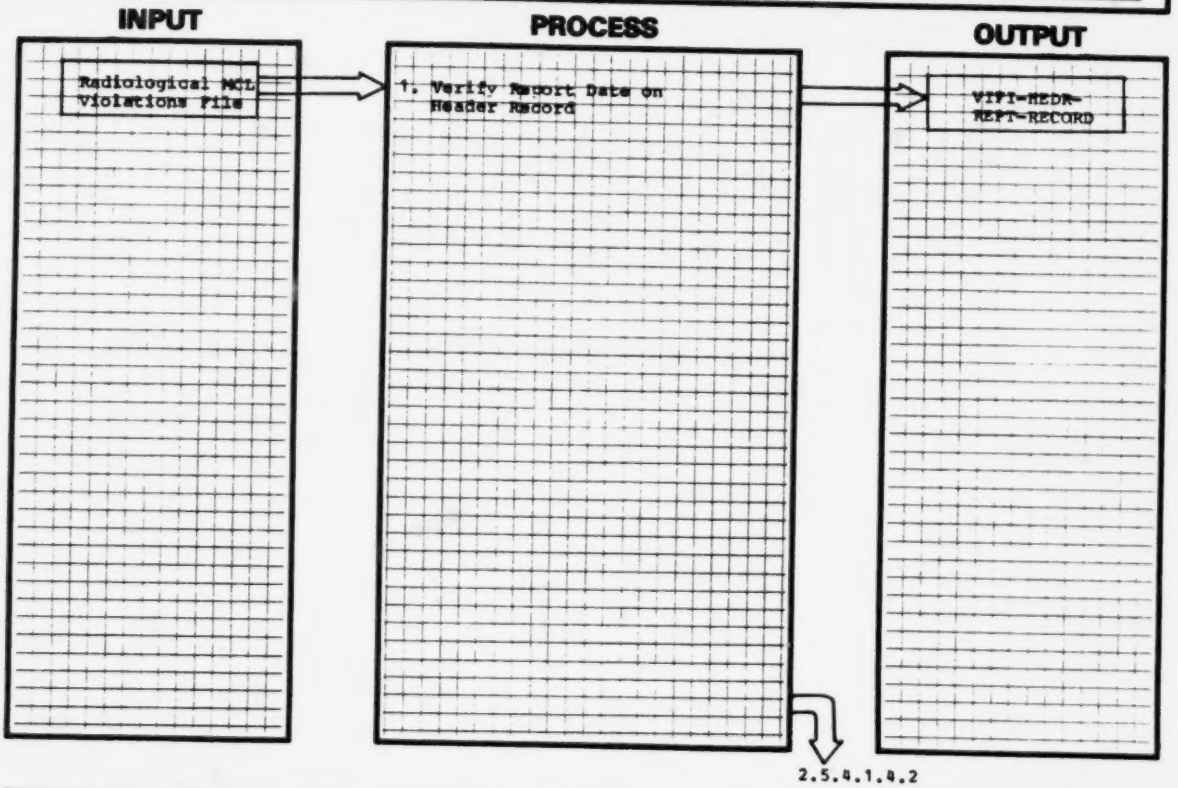


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Header Radiological Maximum Contaminant Level (MCL) Violations File Record to ensure that processing is to continue.	2.5.4.1.4.1	WAQC041	
2	Build an internal Data Element Table (DET) from the DET.	2.5.4.1.4.2	WAQC041	
3	Edit the 'SORT' Processing Options. If any Processing Options are in error, program execution terminates.	2.5.4.1.4.3	WAQC041	
4	Build the Radiological Maximum Contaminant Level (MCL) Violations Report File from the Radiological MCL Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited is step 2. If there are no 'SORT' Processing Options records, the sort key is built sequentially.	2.5.4.1.4.4	WAQC041	
5	Sort the Radiological MCL Violations Report File by a user-defined sequence specified by the 'SORT' Processing Options or by the sequentially created Sort Key.	2.5.4.1.4.5	WAQC041	
6	Produce the Radiological MCL Violations Report by printing data from the Sorted Radiological MCL Violations Report File. Produce the Standard Sort Sequence Report which will contain either the Sort Sequence Report or the Processing Options errors.	2.5.4.1.4.6	WAQC041	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-13-77 **Page:** 1 of 1

Diagram No.: 2.5.4.1.4.1 **Description:** Verify Radiological MCL Violations File Header Record

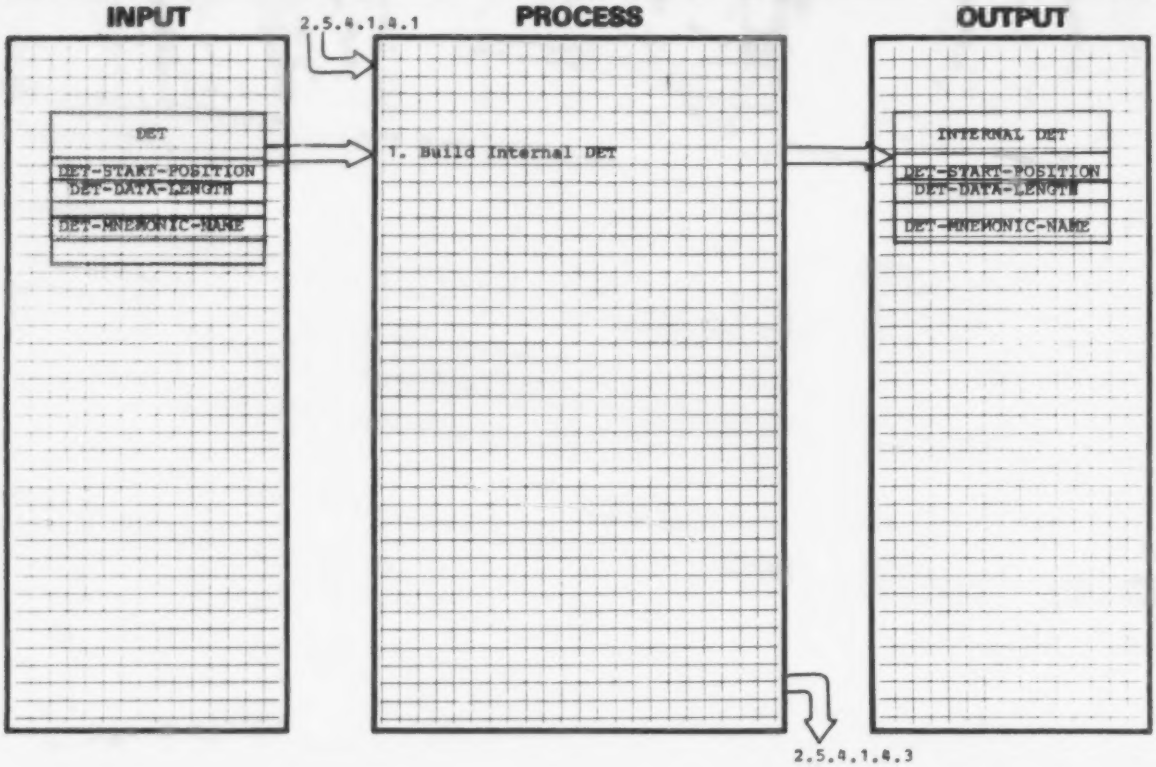


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Radiological Maximum Contaminant Level (MCL) Violations File is written during execution of program WAQC035 or WAQC036 and carries information from the 'PROC' record processed by program WAQC025. If, for any reason, WAQC035 or WAQC036 terminated abnormally, the field VIFI-H-R-DATE will contain '000000' signifying that this processing is to also terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for 'LOW VALUES'.		WAQC041	213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-13-77 **Page:** 1 **of** 1

Diagram No.: 2.5.4.1.4.2 **Description:** Build Internal DET

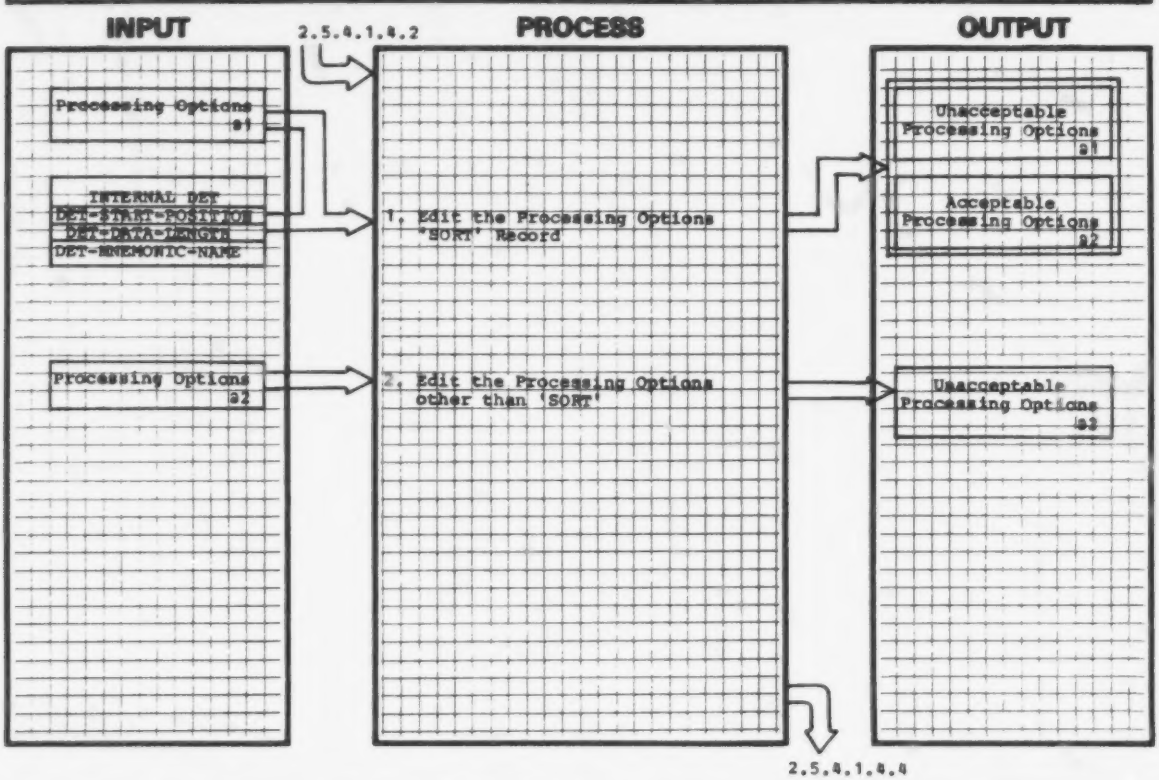


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Data Element Table (DET) of data element length, file start position, and data element mnemonic from the DET. These values are contained on one DET file with all records having a file ID of "VI". The internal DET is to be used to build the Sort Key.		WAQC041	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 1-13-77 **Page:** 1 of 1

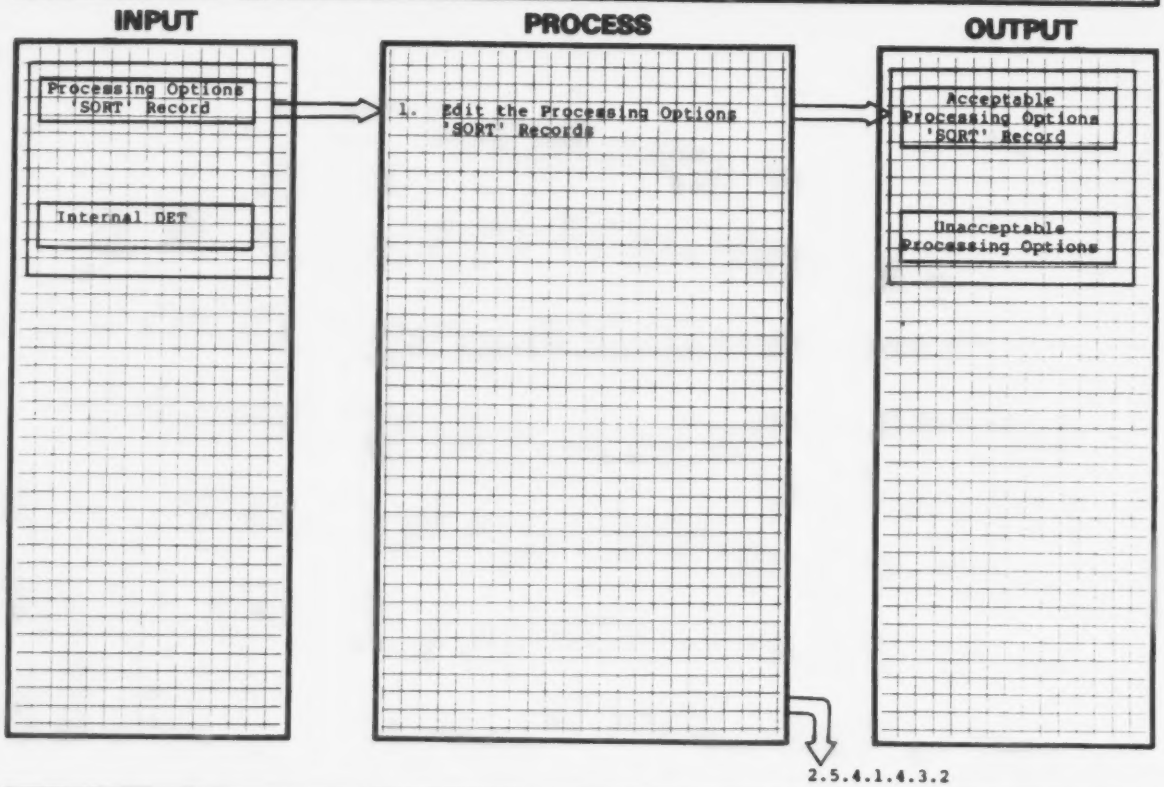
Diagram No.: 2.5.4.1.4.3 **Description:** Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) with 'SORT' in positions 1-4.	2.5.4.1. 4.3.1	MAQC041	
2	Edit for Processing Options other than 'SORT'. If found, it is an error.	2.5.4.1. 4.3.2	MAQC041	
	NOTE: If an error has been detected, an image of the Processing Options record and all associated error message are to be printed on the Standard Sort Sequence Report.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-13-77 **Page:** 1 of 1
Diagram No.: 2.5.4.1.4.3.1 **Description:** Edit the Processing Options 'SORT' Records

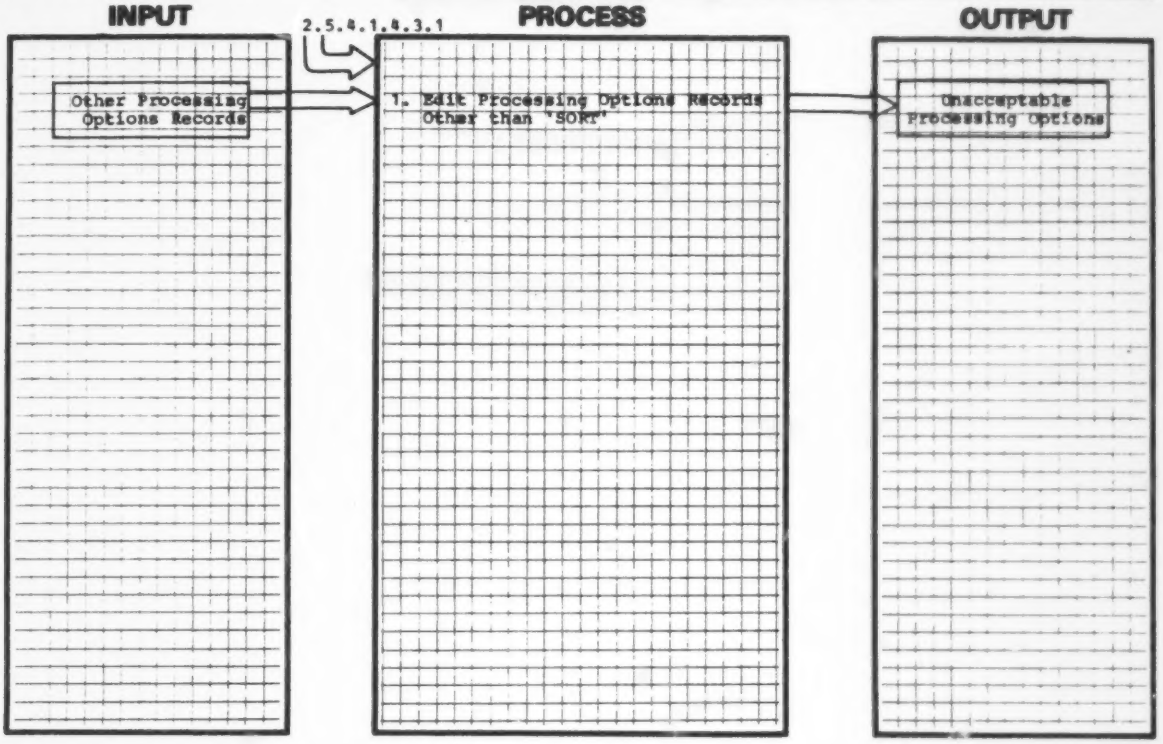


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		MAQC041	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-13-77 **Page:** 1 of 1

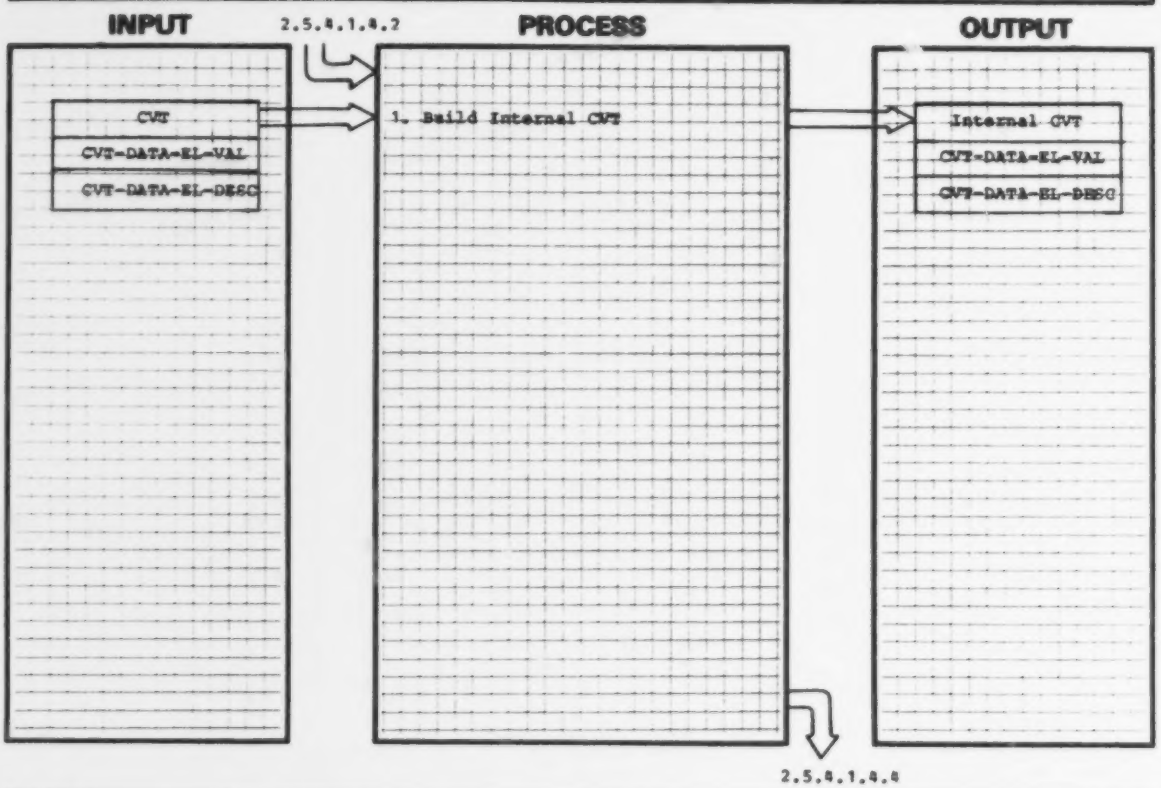
Diagram No.: 2.5.4.1.4.3.2 **Description:** Edit Other Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing terminates. NOTE: If an error has been detected, an image of the Processing Options record and all associated error messages is to be printed on the Standard Sort Sequence Report.		WAQC041	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-13-77 Page: 1 of 1
Diagram No.: 2.5.4.1.4.3 Description: Build Internal Code Value Table

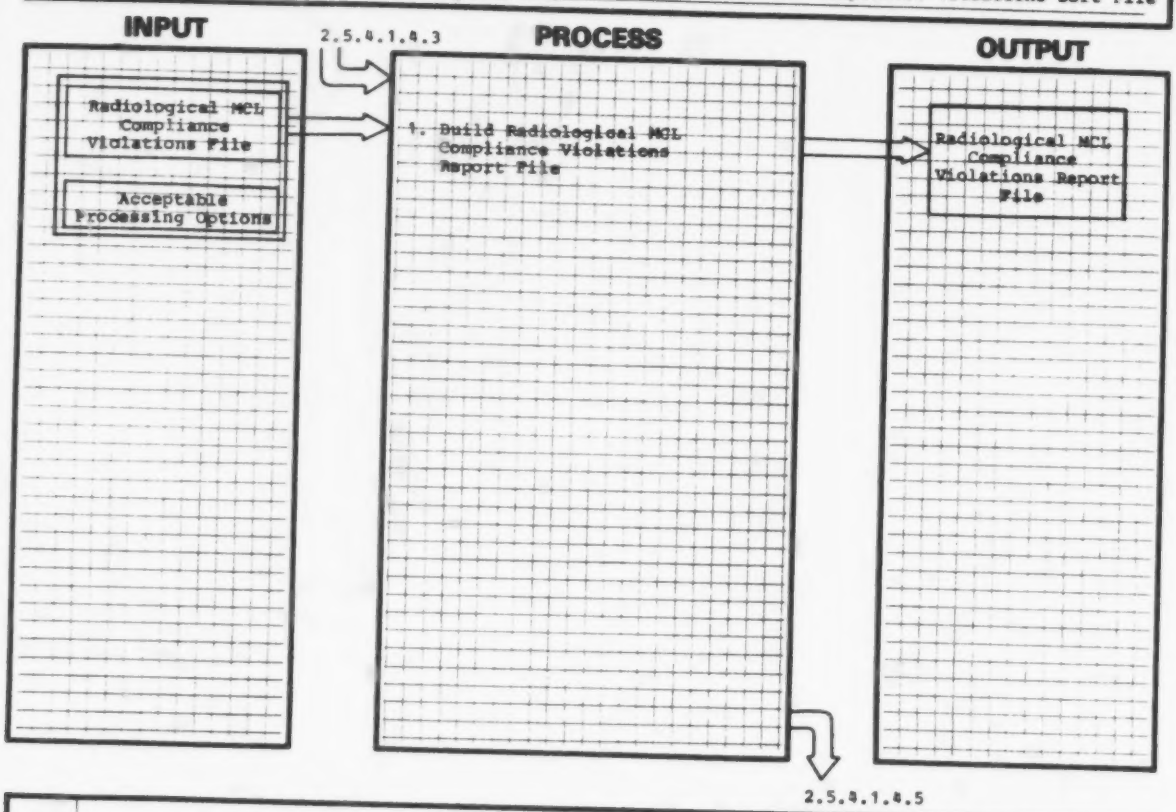


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of Contaminant ID and appropriate contaminent names. The 'MS' external CVT file will be searched and the appropriate records stored on the internal CVT. The length of 4 will be coded in the program and if no contaminent name is found on the CVT file for a Contaminant ID a message 'NAME NOT ON FILE' will be printed on the Radiological Maximum Contaminant Level (MCL) Compliance Violations Report in the place of contaminant name.		WAQC041	MSIS. 206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-13-77 **Page:** 1 of 2

Diagram No.: 2.5.4.1.4.4 **Description:** Build Radiological MCL Compliance Violations Sort File



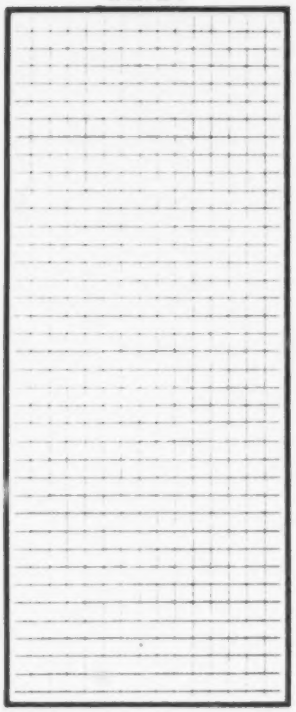
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key for each record from the criteria on the 'SORT' Processing Options record(s) with a maximum length of 30 positions. DET-MNEMONIC-NAME variable is matched to the VIFI-SORT-MNEMONIC. Once matched, DET-FILE-START-POSITION and DET-DATA-LENGTH in the Internal Data Element Table (DET) are used to find the data element's value in the respective position of the Radiological Maximum Contaminant Level (MCL) Compliance Violations File. Redefine the entire VIFI-REPT-RECORD as an array of one position each so that the values can be moved into the sort key by indexing. The Internal DET is used for: a. DET-FILE-START-POSITION is used to find the beginning of the data element value to be moved into the sort key. b. DET-DATA-LENGTH is used as an index for the number of moves for that data element value. The data element values are moved into the sort key according to the VIFI-SORT-SEQUENCE. If a data element is specified to be sorted in "D" (descending) order, then redefine the data element as being binary, subtract this binary number from the highest number which would fit in that size field, and move the result into the sort key one position at a time, instead of the orginal value. If there are not any 'SORT' Processing Options, then make the sort key sequential number such that the output will be sorted into the same sequence as the input file.		WAQC041	213 216 MSIS. 201 MSIS. 311

MODEL STATE INFORMATION SYSTEM

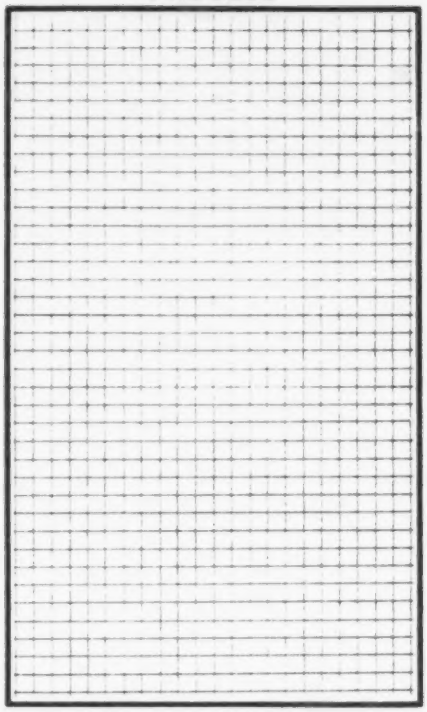
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-13-77 Page: 2 of 2

Diagram No.: 2.5.4.1.4.4 Description: Build Radiological MCL Compliance Violations Sort File

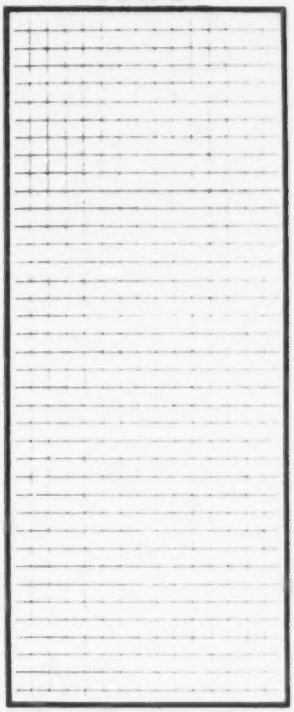
INPUT



PROCESS



OUTPUT

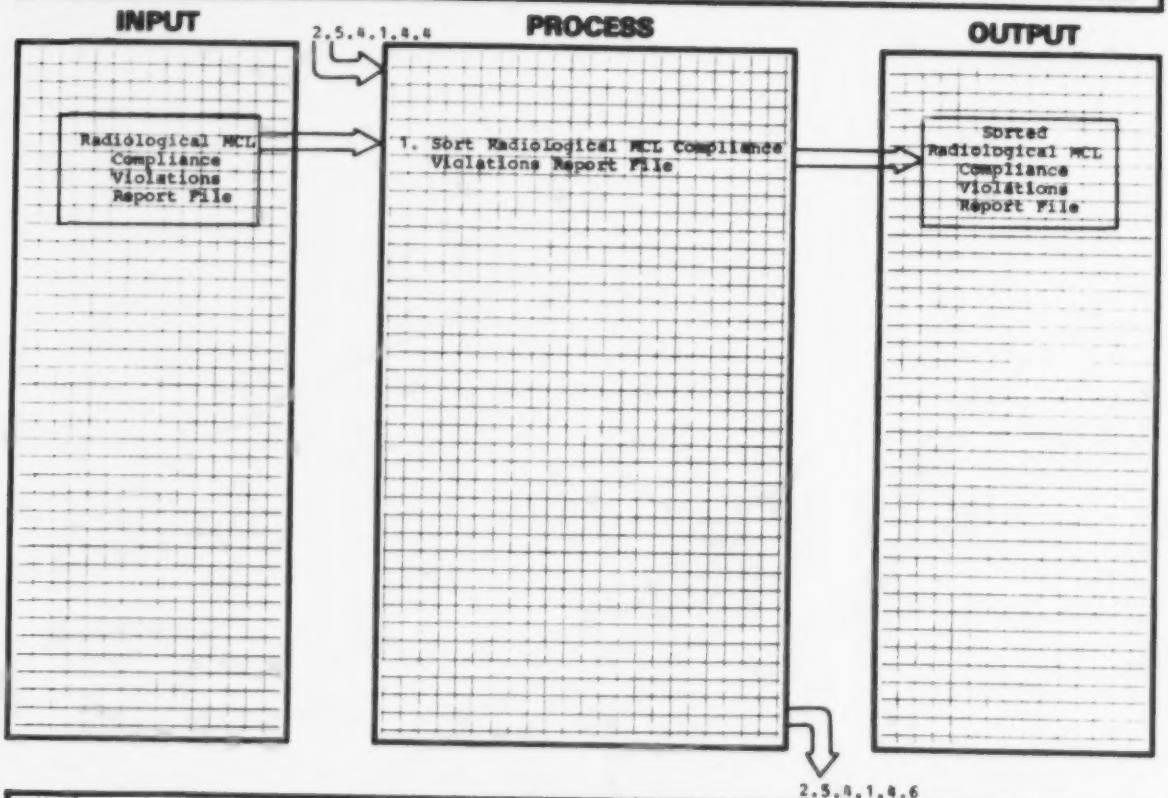


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	NOTE: If DET-FILE-START position is filled with asterisks (*), that means that the data element appears in an array and thus has no unique file starting position. In this case, all the possible values in the array for that data element must be examined. If the SORT-MODE for that data element is 'A' (ascending), the lowest value of the data element must be used in the sort key. Conversely, if the SORT-MODE is 'D' (descending), the highest value of the data element must be used in building the sort key (i.e. subtract the highest value from the highest number which would fit into that size field). A Standard Sort Sequence Report will be produced. (SEE HIPO 2.5.4.1.3.6) NOTE: The first record of Radiological MCL Compliance Violations File contains information needed for producing the Headers on the Radiological MCL Violations Report. Read this first record and save the data. Do not build a sort key or a record for the Sorted Radiological MCL Compliance Violations Report from this first record.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-13-77 Page: 1 of 1

Diagram No.: 2.5.4.1.4.5 Description: Sort Radiological MCL Compliance Violations Sort File

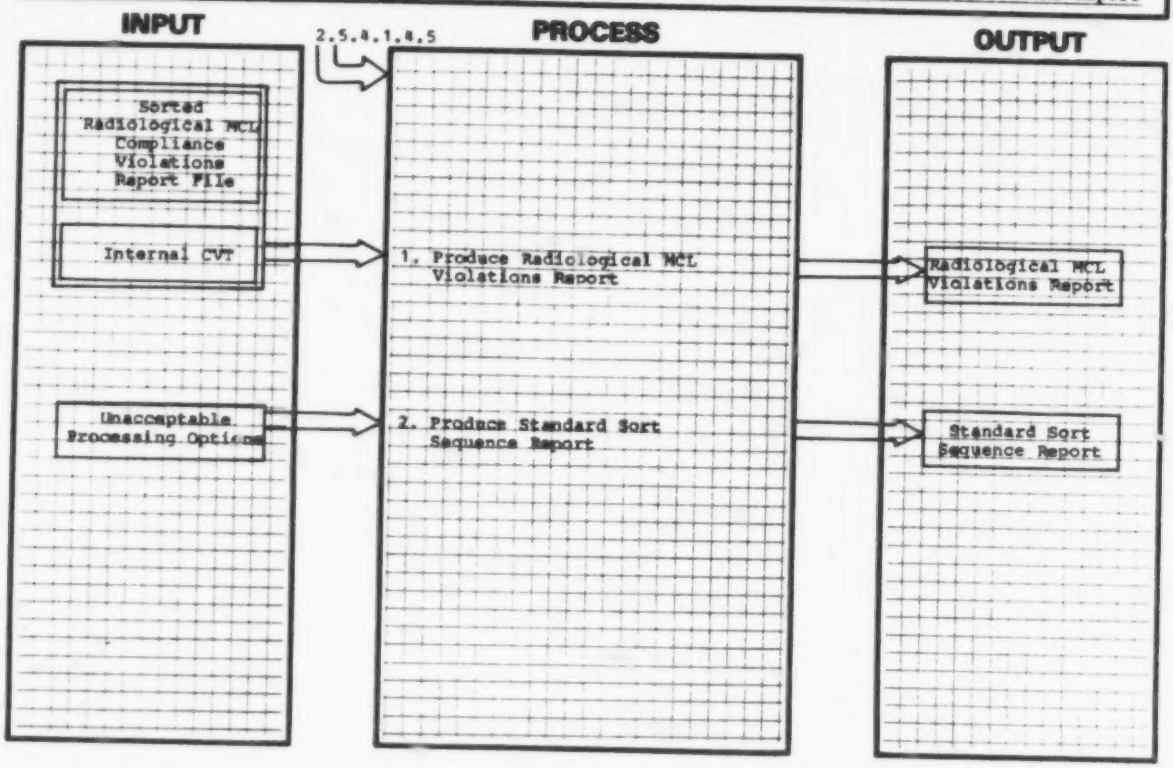


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Radiological Maximum Contaminant Level (MCL) Compliance Violations File in ascending sequence. (When VIFI-SORT-MODE = "D", the records are adjusted for descending sequence when building the sort key so that the ascending sort will actually put the records in descending order.)		HAQC041	216

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-13-77 Page: 1 of 1

Diagram No.: 2.5.4.1.4.6 Description: Produce Radiological MCL Compliance Violations Report

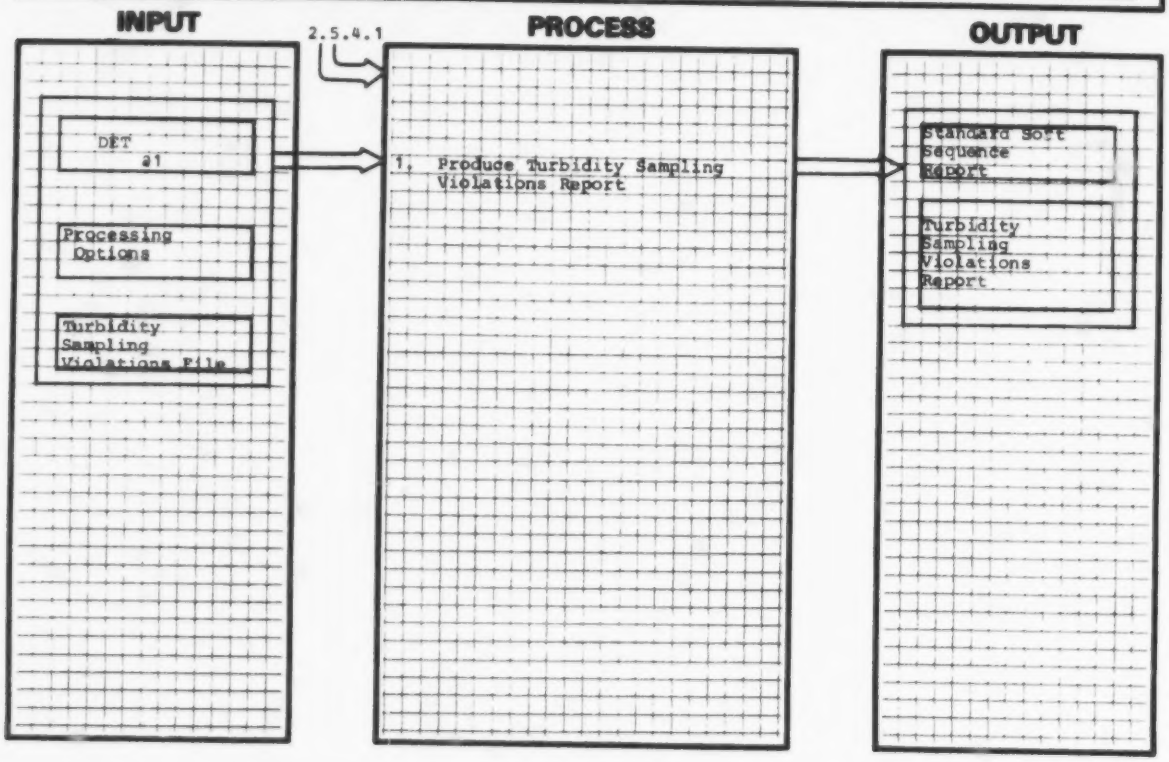


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Radiological Maximum Contaminant Level (MCL) Compliance Violations Report from data on the Sorted Radiological MCL Compliance Violations Report File. Contaminant name will be from the Internal Code Value Table (CVT). The result fields will be converted from absolute values to decimal values using the value in the decimal place indicator for the field. Example: If VIFI-M-MCL-VIOLATED equal 12345 and VIFI-M-MCL-VIOL-DECIMALS equals 2 then the field on the report would be 123.45. Three violation records will be printed per page. To get the dates for the report, use the to and from date and the report date on the first record on the Sorted Radiological MCL Compliance Violations Report File. Convert all Julian Dates, (YYDDD), to Calendar dates, (MMDDYY) before printing.		WAQC041	213 309 216
2	Produce the Standard Sort Sequence Report. If any processing error messages are printed, the record image and all associated error messages are printed. Also produce the report of the Sort Sequence.		WAQC041	MSIS. 309 MSIS. 311

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 of 4

Diagram No.: 2.5.4.2 **Description:** Produce Sampling Violations Reports

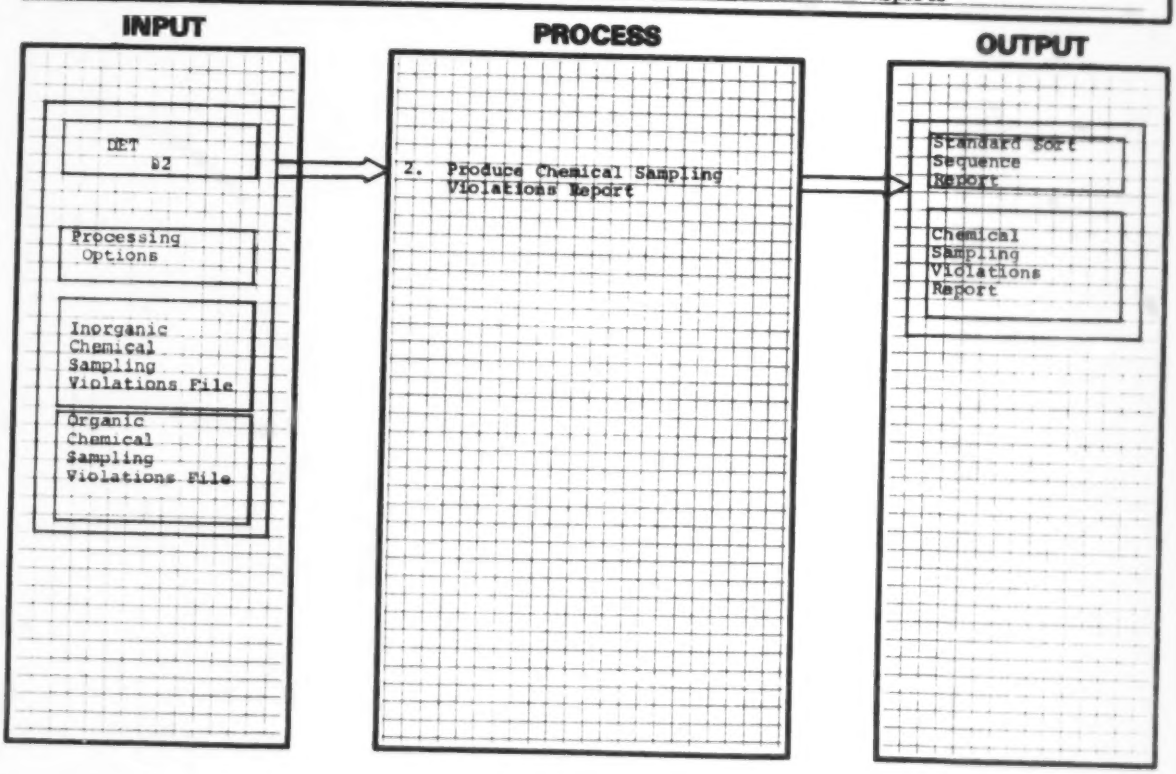


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Turbidity Sampling Violations Report is produced in a six-step process: a. The Turbidity Sampling Violations File header record is verified. b. An internal Data Element Table (DET) is built from the DET. c. The 'SORT' Processing Options are edited. If any Processing Options are in error, program execution terminates. d. The Turbidity Sampling Violations Report File is built from the Turbidity Sampling Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step c. e. The Turbidity Sampling Violations Report File is sorted by the user-defined sequence specified on the 'SORT' Processing Options records. f. The Turbidity Sampling Violations Report is produced from the sorted Turbidity Sampling Violations Report File. The Standard Sort Sequence Report is also produced, containing either the sort sequence or Processing Options error messages.	2.5.4.2.1	WAQC080	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 2 of 4

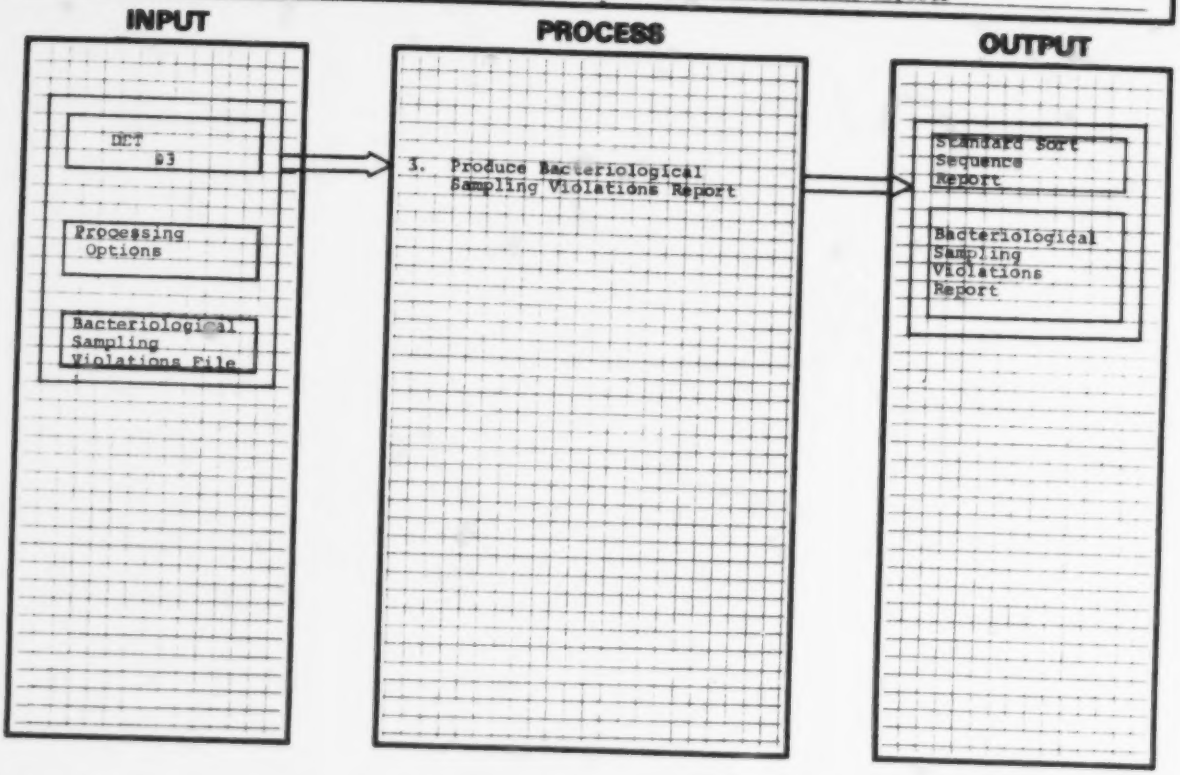
Diagram No.: 2.5.4.2 **Description:** Produce Sampling Violations Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	The Chemical Sampling Violations Report is produced in a six-step process: a. The Chemical Sampling Violations File header record is verified. b. An internal Data Element Table (DET) is built from the DET. c. The 'SORT' Processing Options are edited. If any Processing Options are in error, program execution terminates. d. The Chemical Sampling Violations Report File is built from the Inorganic or Organic Chemical Sampling Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options in Step c. e. The Chemical Sampling Violations Report File is sorted by the user-defined sequence specified on the 'SORT' Processing Options records. f. The Chemical Sampling Violations Report is produced from the sorted Chemical Sampling Violations Report File. The Standard Sort Sequence Report is also produced, containing either the sort sequence or Processing Options error messages.	2.5.4.2.1	WAQC060	

MODEL STATE INFORMATION SYSTEM

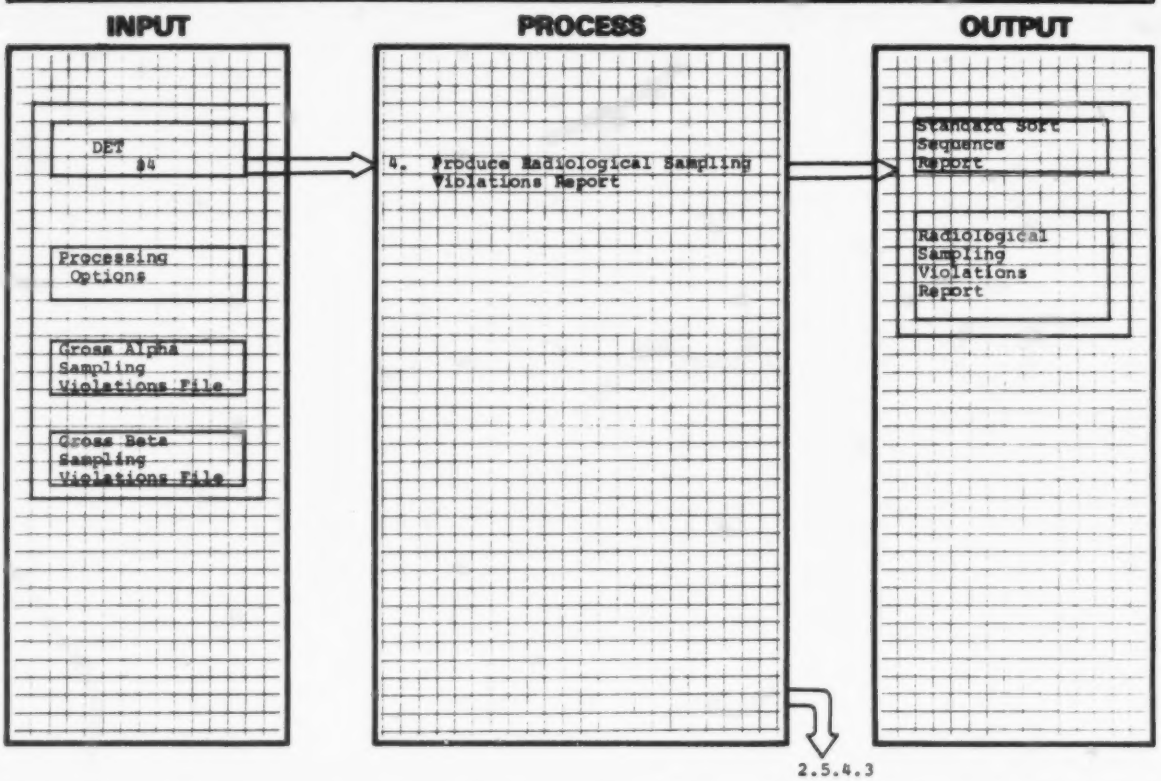
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 3 of 4
Diagram No.: 2.5.4.2 **Description:** Produce Sampling Violations Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	The Bacteriological Sampling Violations Report is produced in a six-step process: a. The Bacteriological Sampling Violations File header record is verified. b. An internal Data Element Table (DET) is built from the DET. c. The 'SORT' Processing Options are edited. If any Processing Options are in error, program execution terminates. d. The Bacteriological Sampling Violations Report File is built from the Bacteriological Sampling Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options in Step c. e. The Bacteriological Sampling Violations Report File is sorted by the user-defined sequence specified by the 'SORT' Processing Options records. f. The Bacteriological Sampling Violations Report is produced from the sorted Bacteriological Sampling Violations Report File. The Standard Sort Sequence Report is also produced, containing either the sort sequence or Processing Options error messages.	2.5.4.2.3	WAQC070	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 4 of 4
Diagram No.: 2.5.4.2 **Description:** Produce Sampling Violations Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
4	The Radiological Sampling Violations Report is produced in a six-step process: a. The Radiological Sampling Violations File header record is verified. b. An internal Data Element Table (DET) is built from the DET. c. The 'SORT' Processing Options are edited. If any Processing Options are in error, program execution terminates. d. The Radiological Sampling Violations Report File is built from the Radiological Sampling Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options in Step c. e. The Radiological Sampling Violations Report File is sorted by the user-defined sequence specified by the 'SORT' Processing Options records. f. The Radiological Sampling Violations Report is produced from the sorted Radiological Sampling Violations Report File. The Standard Sort Sequence Report is also produced, containing either the sort sequence or Processing Options error messages.	2.5.4.2.4	WAQC061	

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC080
DATE: February 11, 1977

I. OBJECTIVES:

The objective of this program is to produce the Turbidity Sampling Violations Report sorted in a user-defined sequence using data from the Turbidity Sampling Violations File.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Turbidity Sampling Violations File	VIFI-HEDR-REPT-RECORD VIFI-S-REPT-RECORD	WAQC.213 WAQC.231
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layout:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Turbidity Sampling Violations Report	WAQC.312
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify that the Header Turbidity Sampling Violations File Record contains a valid processing date or '000000'. If '000000' that indicates processing is to be terminated without report production.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the 'SORT' Processing Options records for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name, and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Turbidity Sampling Violations Report File by constructing sort keys using the 'SORT' Processing Options and the Turbidity Sampling Violations File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Turbidity Sampling Violations File.

5. Sort the Turbidity Sampling Report File from Step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Turbidity Sampling Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

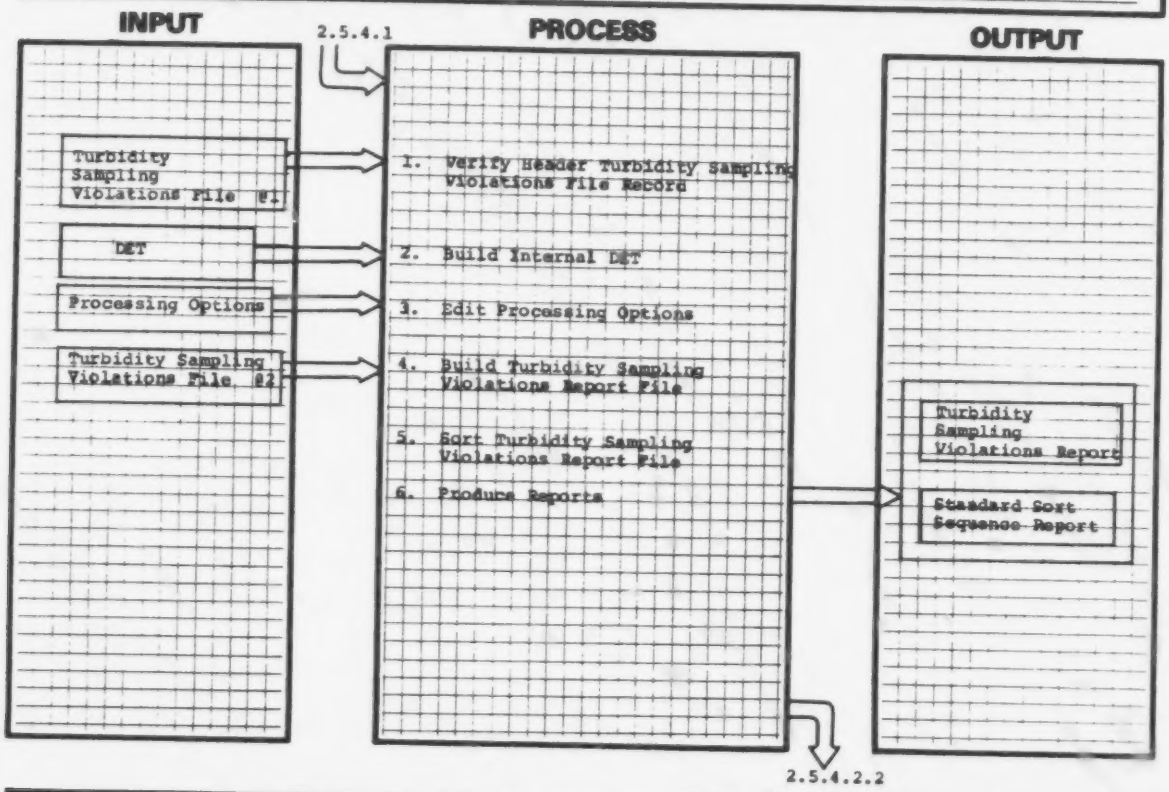
1. Sort Options

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1
Diagram No.: 2.5.4.2.1 **Description:** Produce Turbidity Sampling Violations Report

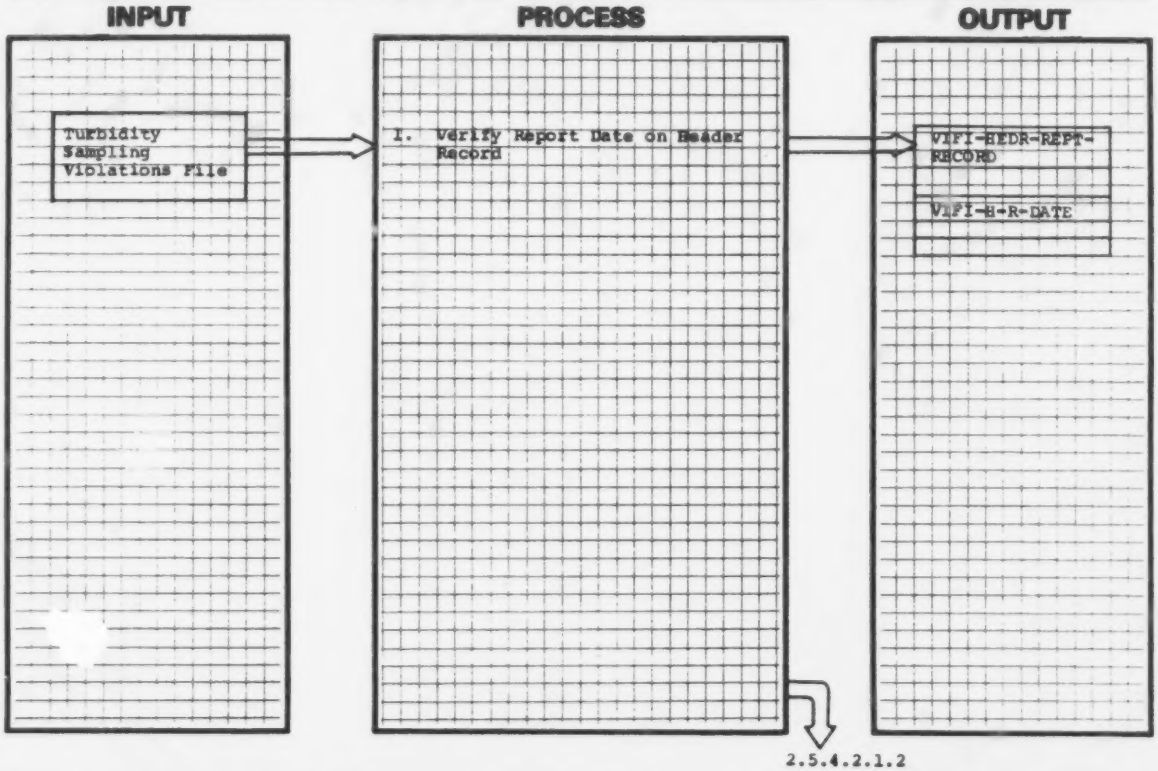


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Header Turbidity Sampling Violations File Record to ensure that processing is to continue.	2.5.4.2.1.1	WAQC080	
2	Build an internal Data Element Table (DET) from the DET.	2.5.4.2.1.2	WAQC080	
3	Edit the 'Sort' Processing Options records. If any Processing Options are in error, processing will be terminated.	2.5.4.2.1.3	WAQC080	
4	Build the Turbidity Sampling Violations Report File from the Turbidity Sampling Violations File by addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 3. If there are no 'SORT' Processing Options records, the sort key is built sequentially.	2.5.4.2.1.4	WAQC080	
5	Sort the Turbidity Sampling Violations Report File by a user-defined sequence specified by the 'SORT' Processing Options or by the sequentially created sort key.	2.5.4.2.1.5	WAQC080	
6	Produce the Turbidity Sampling Violations Report by printing data from the Sorted Turbidity Sampling Violations Report File. Produce the Standard Sort Sequence Report which will contain either the sort sequence report or the Processing Options errors.	2.5.4.2.1.6	WAQC080	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 **of** 1

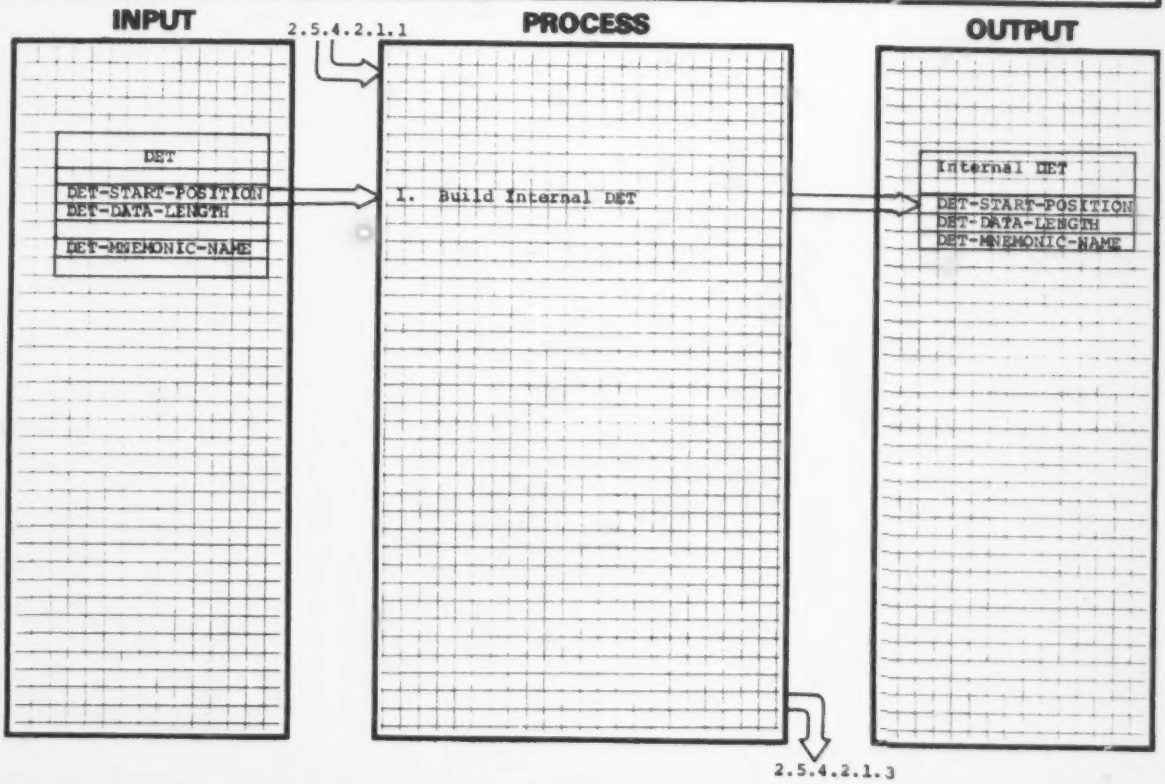
Diagram No.: 2.5.4.2.1.1 **Description:** Verify Header Turbidity Sampling Violations File Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Turbidity Sampling Violations File is written during execution of program WAQC031 and carries information from the 'PROC' record processed by program WAQC025. If, for any reason, WAQC031 terminated abnormally, the field VI -R-DATE will contain '000000' signifying that this pr sing is to also terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for "LOW VALUES".		WAQC080	213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 **of** 1
Diagram No.: 2.5.4.2.1.2 **Description:** Build Internal DET

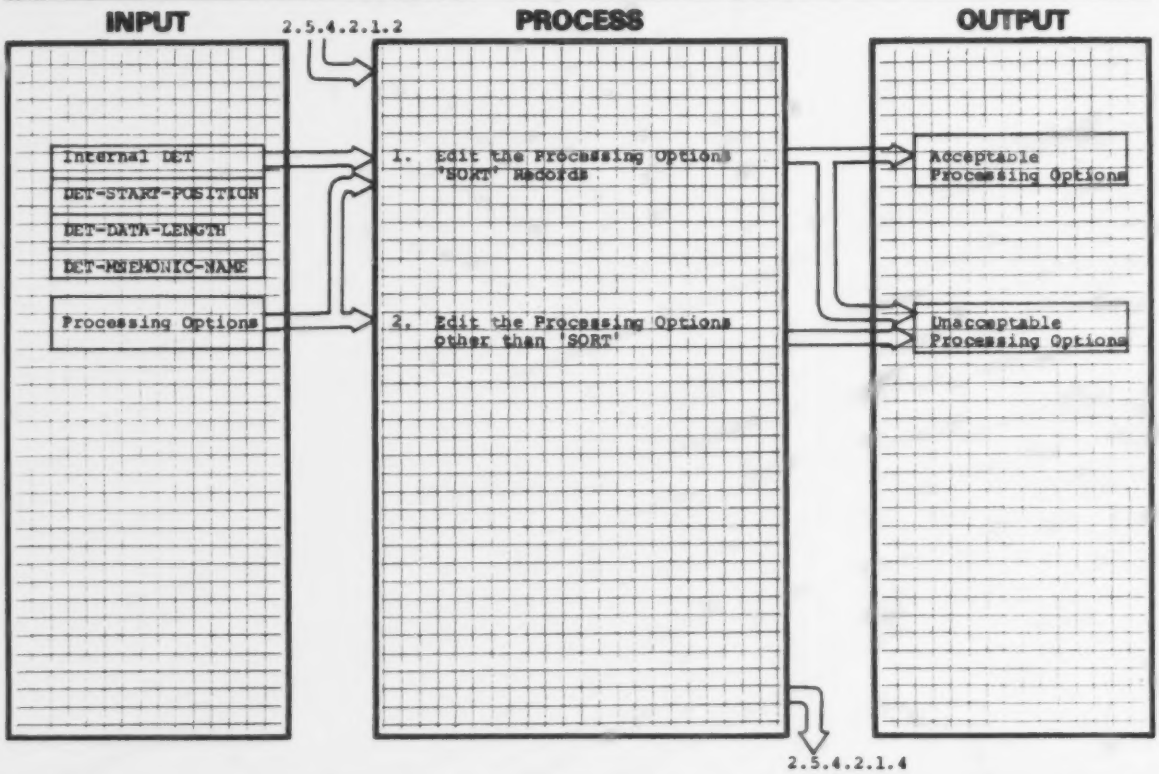


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from tne DET with all records having a file ID of VI. Only the file start position, data element length, and data element mnemonic are used.		WAQC080	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1

Diagram No.: 2.5.4.2.1.3 **Description:** Edit Processing Options

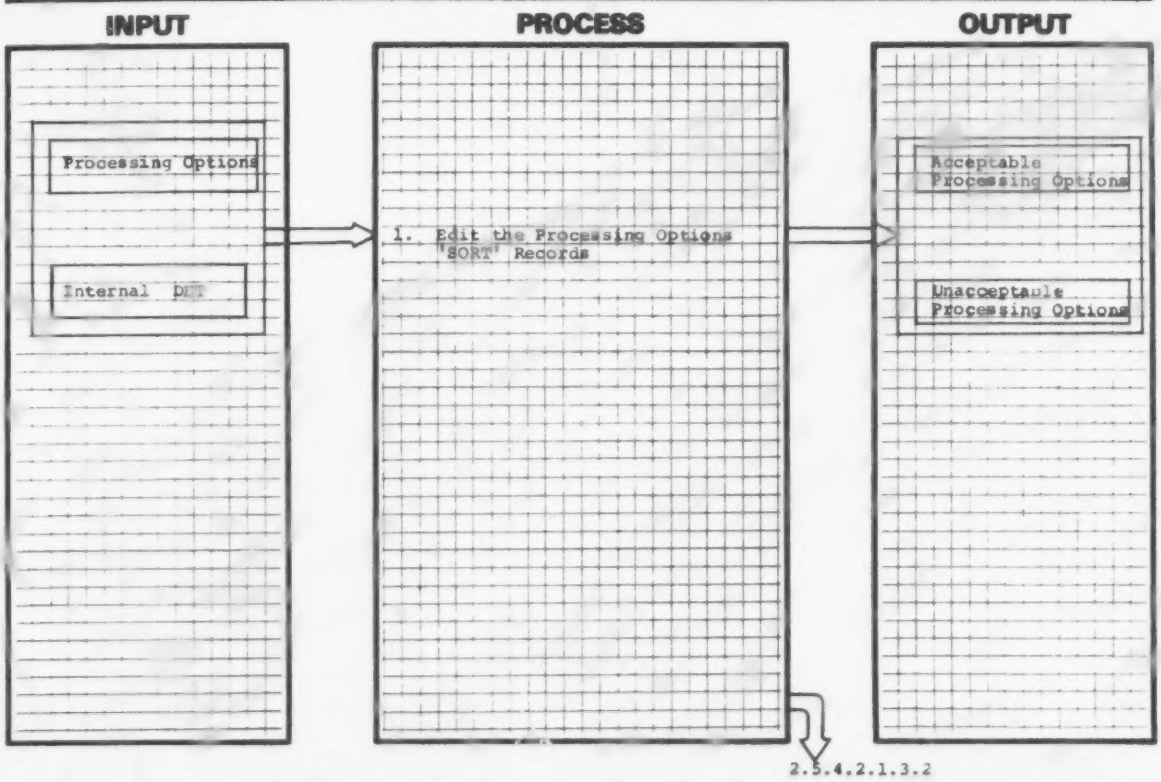


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) with 'SORT' in positions 1-4.	2.5.4.2.1.3.1	WAQC080	
2	Edit the Processing Options other than 'SORT'. If found, it is an error.	2.5.4.2.1.3.2	WAQC080	
	Note: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 **of** 1

Diagram No.: 2.5.4.2.1.3.1 **Description:** Edit the Processing Options 'SORT' Records

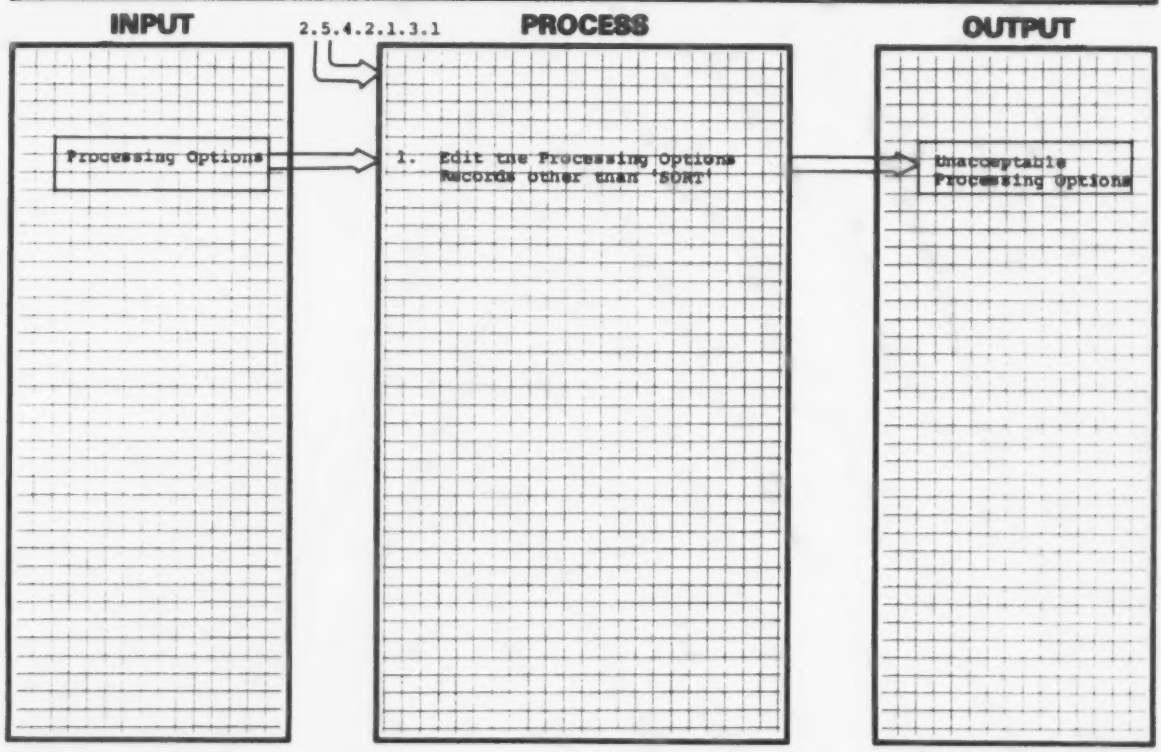


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with "SORT" in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC080	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

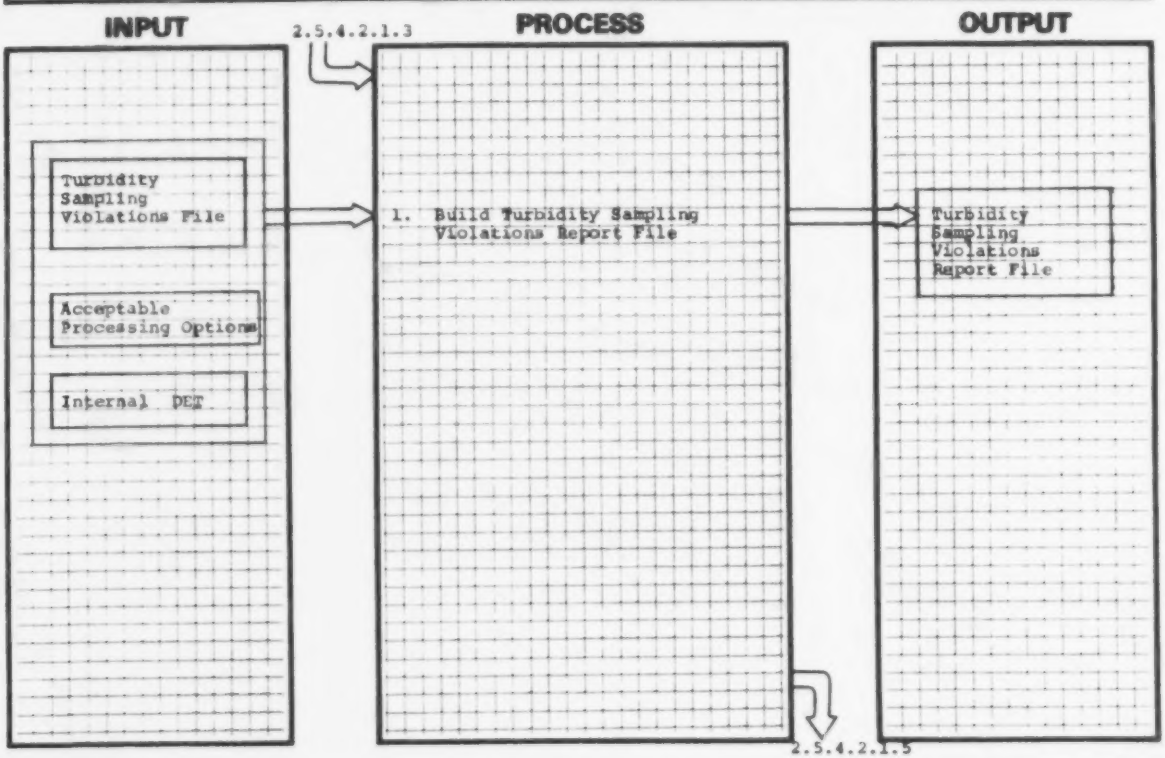
Diagram No.: 2.5.4.2.1.3.2 Description: Edit the Processing Options other than 'SORT'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing will be terminated.		WAQC080	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 **of** 3
Diagram No.: 2.5.4.2.1.4 **Description:** Build Turbidity Sampling Violations Report File

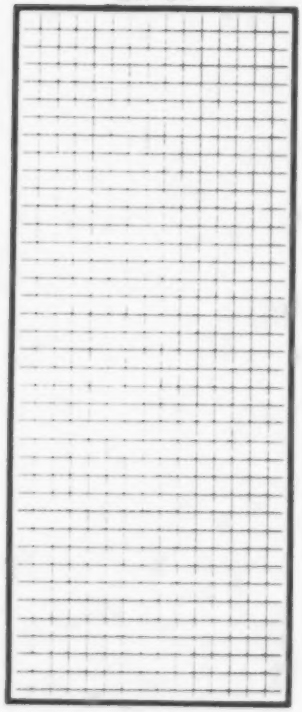


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Turbidity Sampling Violations File based on the criteria on the "SORT" Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Turbidity Sampling Violations File record as an array of one character values. b. Match the VIFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Turbidity Sampling Violations File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Turbidity Sampling Violations File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		WAQC080	213 231 MSIS. 201

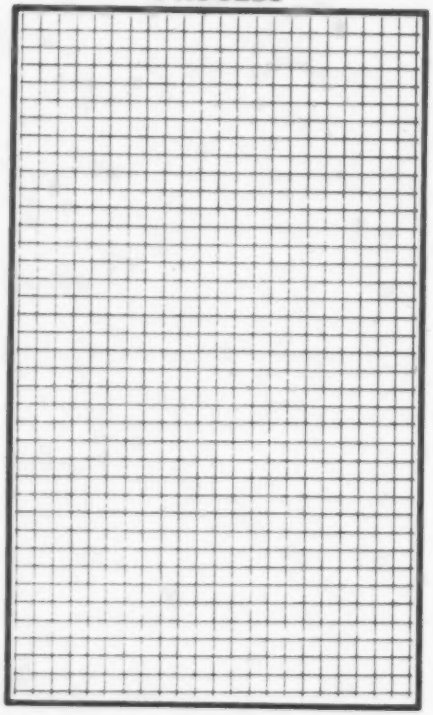
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 2 of 3
Diagram No.: 2.5.4.2.1.4 Description: Build Turbidity Sampling Violations Report File

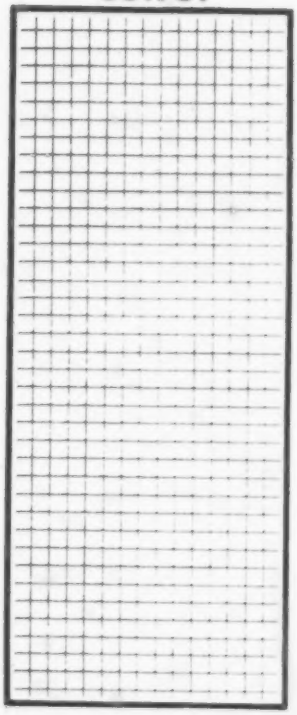
INPUT



PROCESS



OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows: (a) If the VIFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the VIFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the VIFI-SORT-MODE = "A" (ascending), move the value obtained in c. to the proper location in the sort key. If the VIFI-SORT-MODE = "D" (descending), redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field, and move the result into the proper location in the sort key. The proper location is determined by the VIFI-SORT-SEQUENCE. Note: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be:		WAQC080	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 3 of 3

Diagram No.: 2.5.4.2.1.4 Description: Build Turbidity Sampling Violations Report File

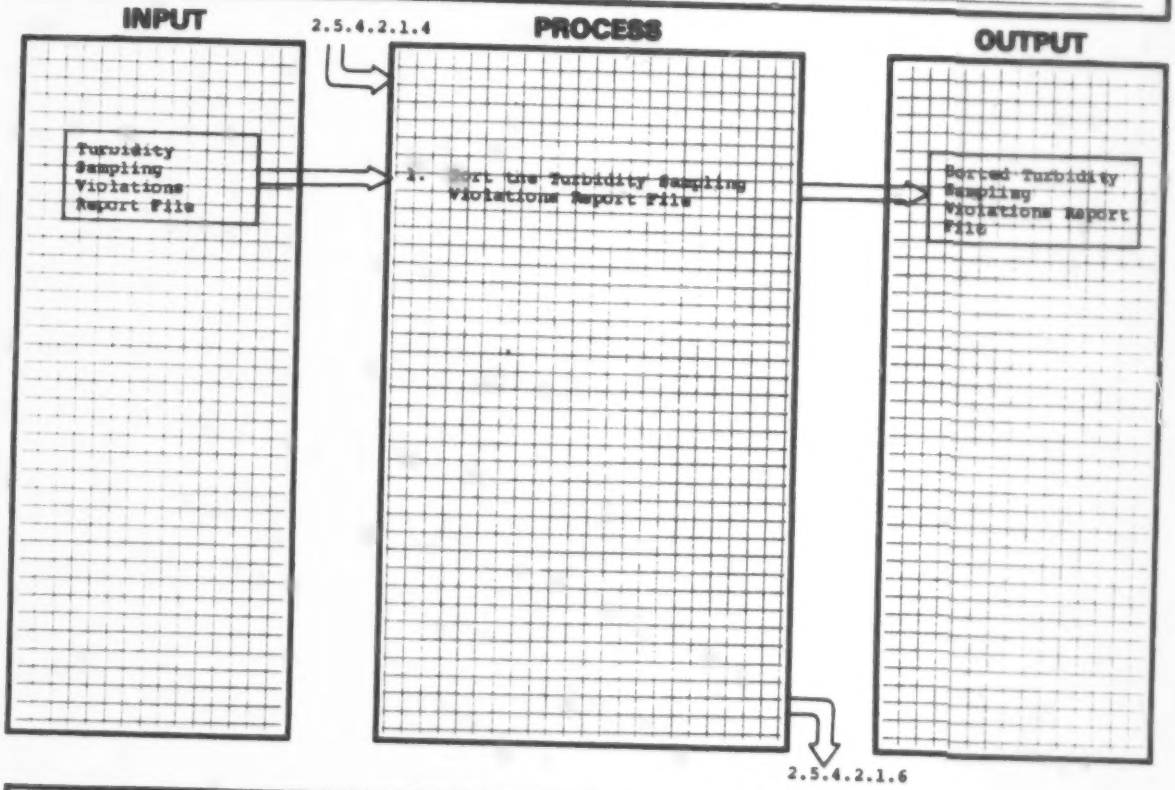
INPUT	PROCESS	OUTPUT

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	000000000000000000000000099999 30 positions The first record of the Turbidity Sampling Violations File is a header record containing information to be used in the report header and is not to be used when building a sort key or in the sort. A Standard Sort Sequence Report will be produced (See HIPO 2.5.4.2.1.6).		WAQC080	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

Diagram No.: 2.5.4.2.1.5 Description: Sort Turbidity Violations Report File

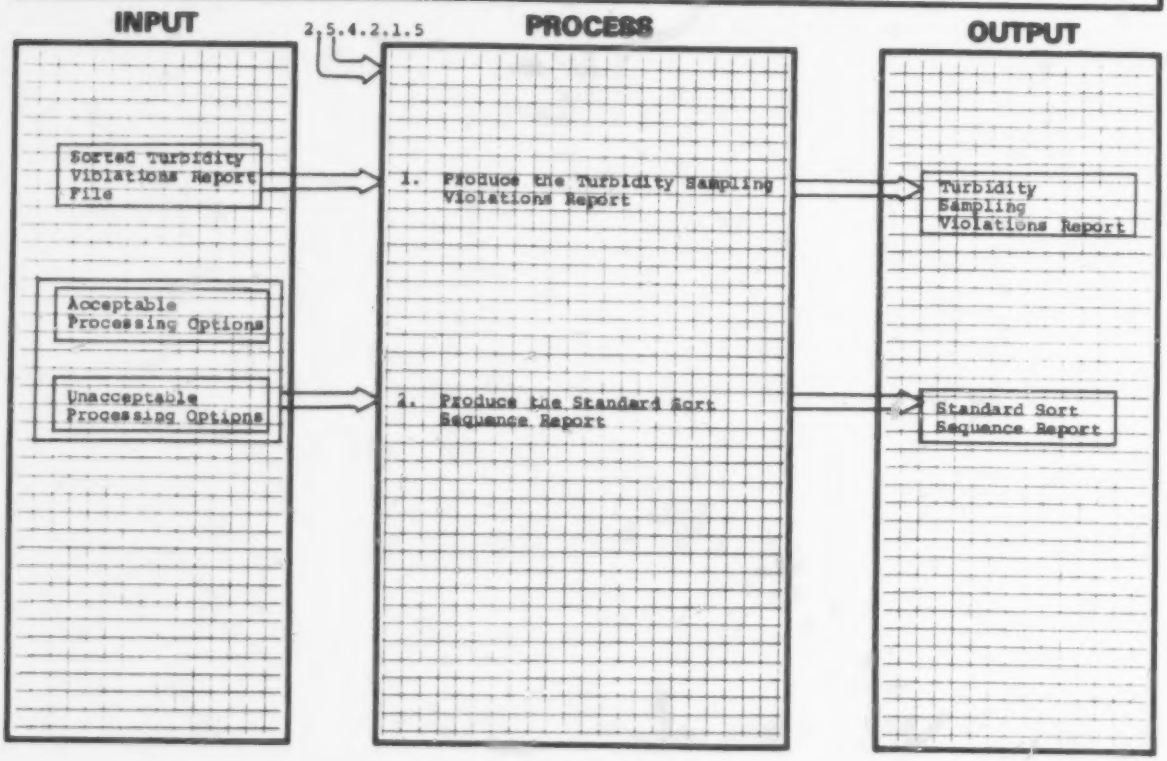


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Turbidity Sampling Violations Report File in ascending sequence according to the thirty position sort key.		WAQC080	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

Diagram No.: 2.5.4.2.1.6 Description: Produce Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Turbidity Sampling Violations Report from data on the Sorted Turbidity Sampling Violations Report File. Replace the X's between 'NUMBER' and 'SAMPLES' with either 'REGULAR' if the violation type is '03' or with 'REPEAT' if the violation type is '04' and leave the SAMPLING CUT-OFF DATE blank. To determine whether a sample is Federal or State, check the first position of Regulation Level, an 'F' is Federal, an 'S' is State. Four violation records will be printed per page. To get the dates for the Report, use the to and from dates and the report date on the header record of the Turbidity Sampling Violations File. Convert all Julian dates, (YYDDD), to calendar dates, (MMDDYY), before printing. Compliance cycle will also be from the header record.		WAQC080	312
2	Produce the Standard Sort Sequence Report. If any processing error messages are printed, the record images and all associated error messages are printed. Also produce the report of the Standard Sort Sequence Report.		WAQC080	MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC060
DATE: 1/20/77

I. OBJECTIVES:

The objective of this program is to produce the Chemical Sampling Violations Report sorted in a user-defined sequence using data from the Chemical Sampling Violations File.

II. INPUTS

A. Record Forms and Layouts

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Chemical Sampling Violations File	VIFI-HEDR-REPT-RECORD VIFI-S-REPT-RECORD	WAQC.213 WAQC.231
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layout:

Not Applicable.

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Chemical Sampling Violations Report	WAQC.310
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable.

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC060
DATE: 1/20/77

I. OBJECTIVES:

The objective of this program is to produce the Chemical Sampling Violations Report sorted in a user-defined sequence using data from the Chemical Sampling Violations File.

II. INPUTS

A. Record Forms and Layouts

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Chemical Sampling Violations File	VIFI-HEDR-REPT-RECORD VIFI-S-REPT-RECORD	WAQC.213 WAQC.231
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layout:

Not Applicable.

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Chemical Sampling Violations Report	WAQC.310
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

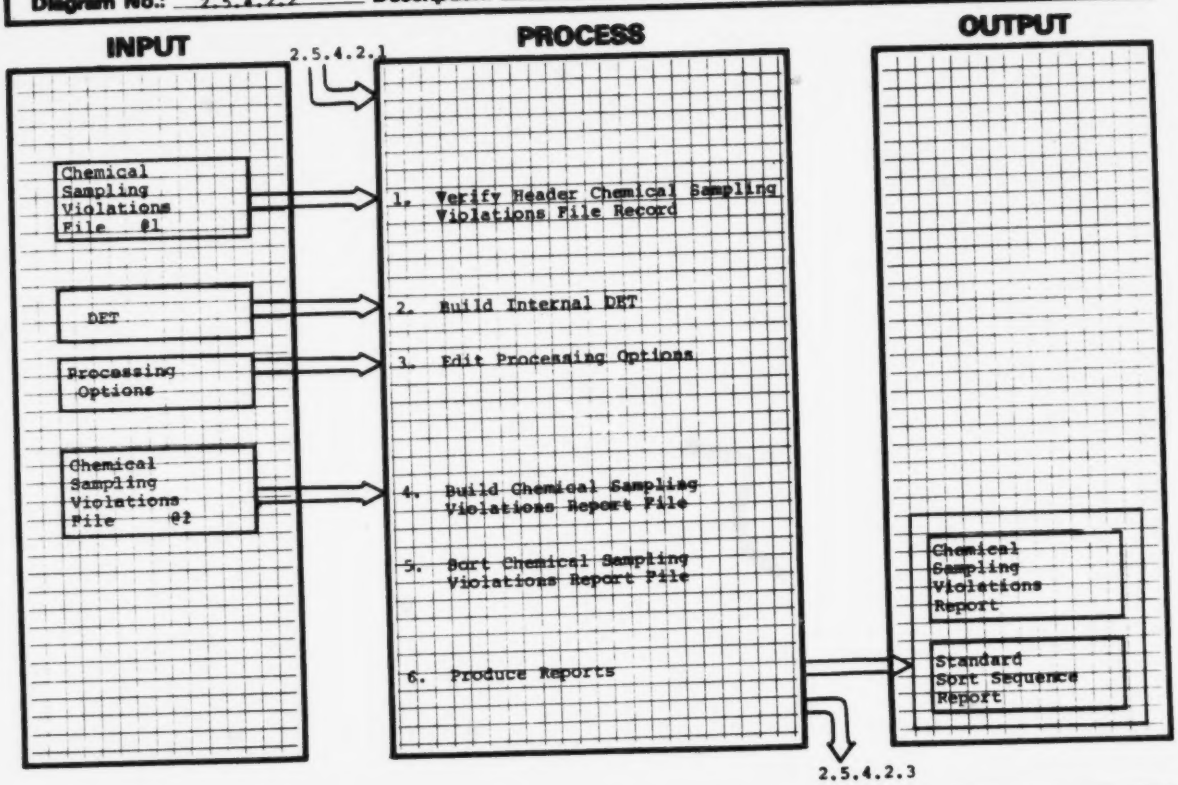
C. Turnaround Documents:

Not Applicable.

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 of 1

Diagram No.: 2.5.4.2.2 **Description:** Produce Chemical Sampling Violations Report

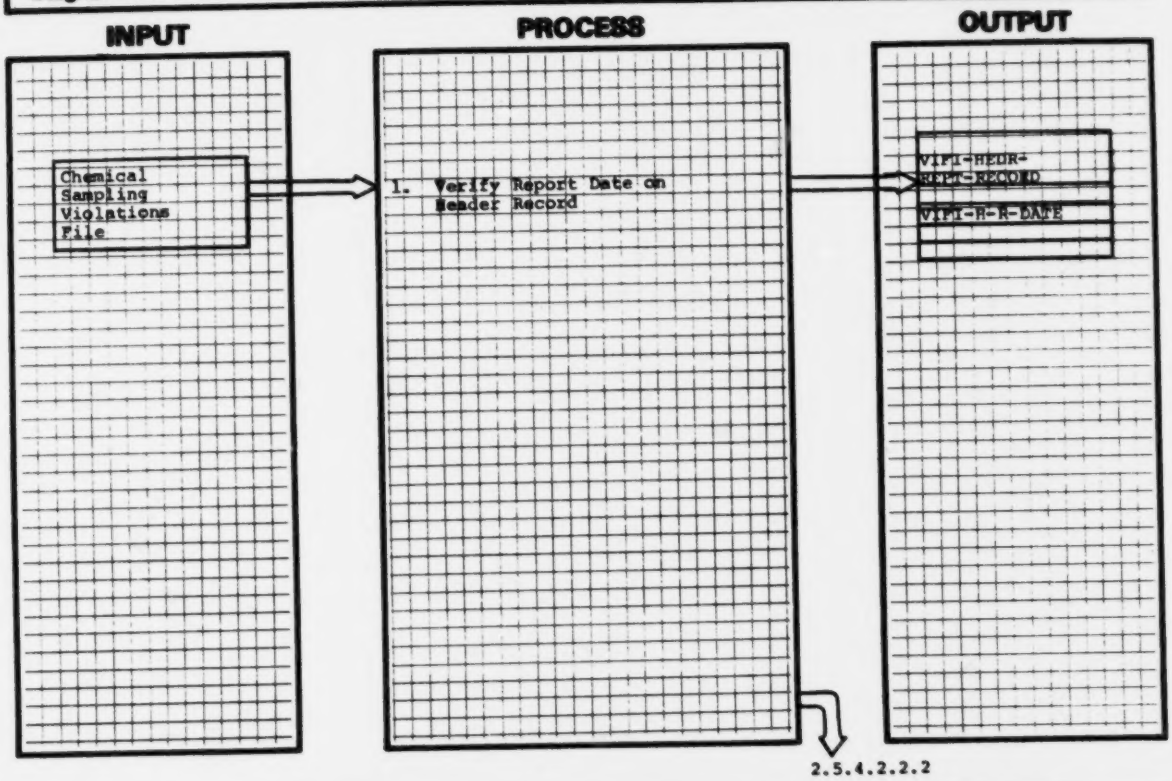


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header Chemical Sampling Violations File Record to insure that processing is to continue.	2.5.4.2.2.1	WAQC060	
2	Build an Internal Data Element Table (DET) from the DET.	2.5.4.2.2.2	WAQC060	
3	Edit the 'SORT' Processing Options. If any Processing Options are in error, processing will be terminated.	2.5.4.2.2.3	WAQC060	
4	Build the Chemical Sampling Violations Report File from the Chemical Sampling Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 3. If there are no 'SORT' Processing Options records, the sort key is built sequentially.	2.5.4.2.2.4	WAQC060	
5	Sort the Chemical Sampling Violations Report File by a user-defined sequence specified by the 'SORT' Processing Options or by the sequentially created sort key.	2.5.4.2.2.5	WAQC060	
6	Produce the Chemical Sampling Violations Report by printing data from the Sorted Chemical Sampling Violations Report File. Produce the Standard Sort Sequence Report which will contain either the sort sequence report or the Processing Options errors.	2.5.4.2.2.6	WAQC060	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 1 of 1

Diagram No.: 2.5.4.2.2.1 Description: Verify Header Chemical Sampling Violations File Record

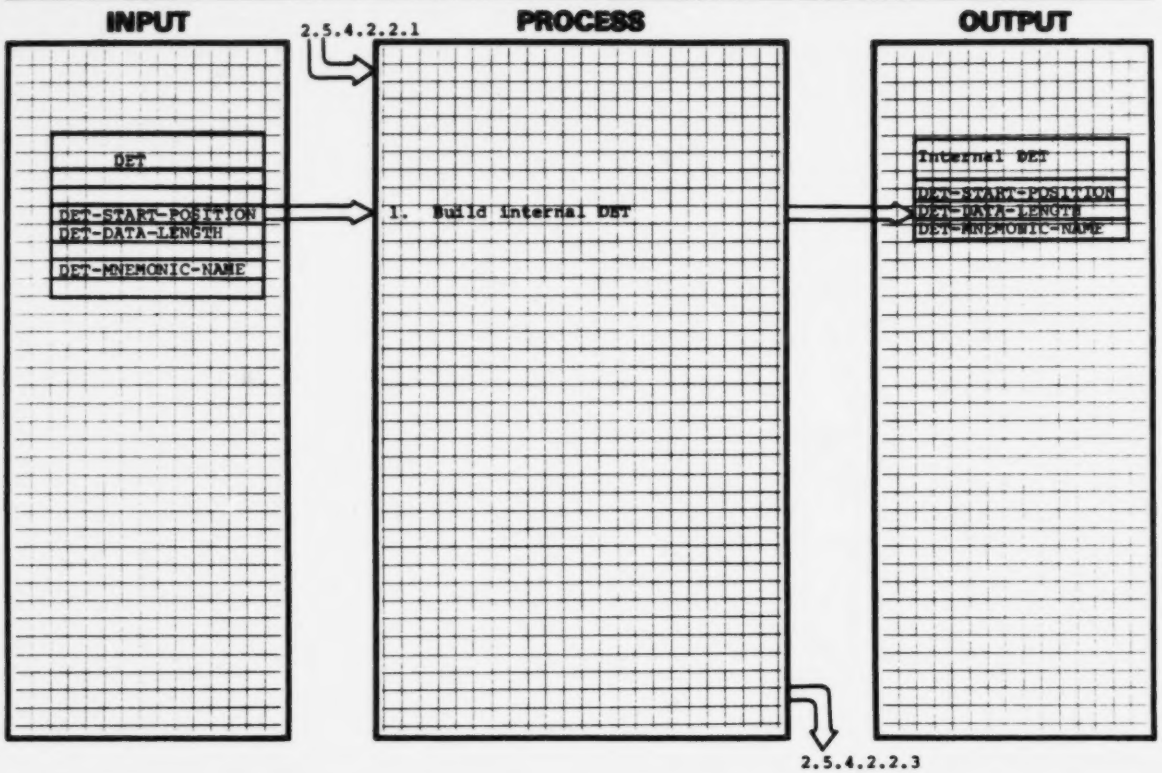


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Chemical Sampling Violations File is written during execution of program WAQC032 and carries information from the 'PROC' record processed by program WAQC025. If, for any reason, WAQC032 terminated abnormally, the field VIFI-H-R-DATE will contain '000000' signifying that this processing is to also terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for 'LOW VALUES.'		WAQC060	213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 of 1

Diagram No.: 2.5.4.2.2.2 **Description:** Build Internal Data Element Table

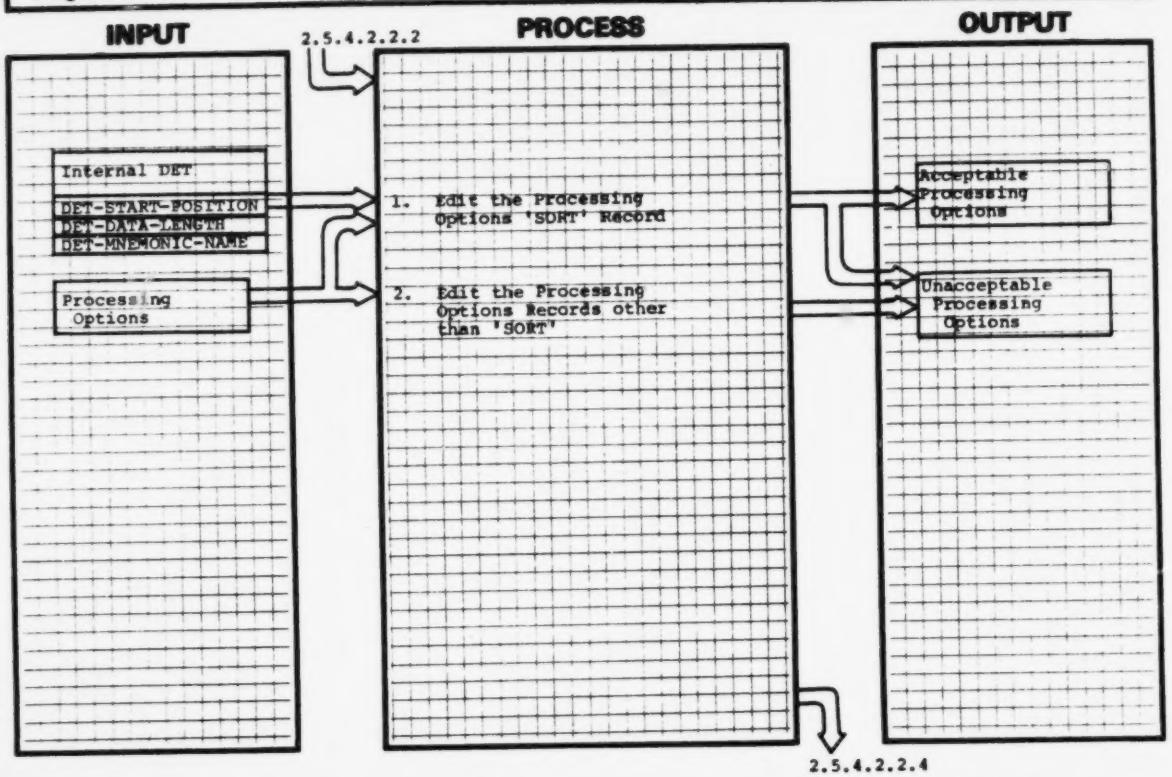


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of VI. Only the file start position, data element length, and data element mnemonic are used.		WAQC060	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 **of** 1

Diagram No.: 2.5.4.2.2.3 **Description:** Edit Processing Options

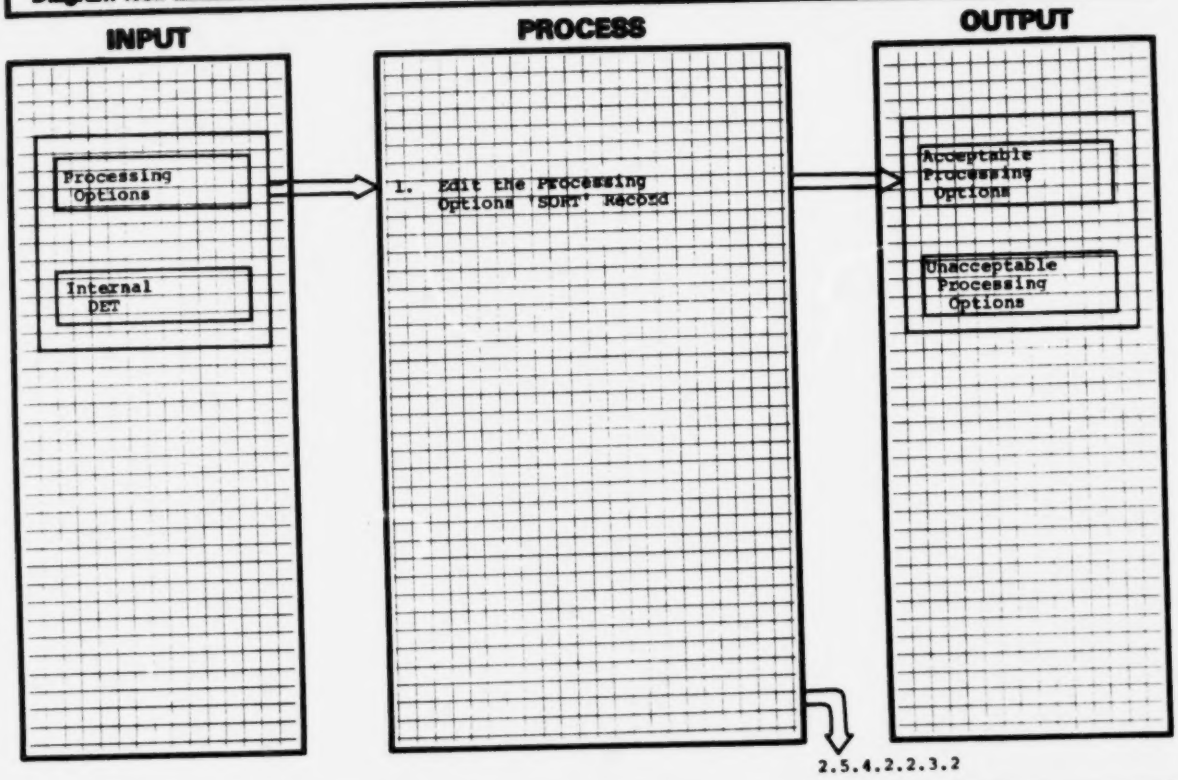


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4.	2.5.4.2.2.3.1	WAQC060	
2	Edit for Processing Options other than 'SORT.' If found, it is an error. NOTE: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.	2.5.4.2.2.3.2	WAQC060	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 1 of 1

Diagram No.: 2.5.4.2.2.3.1 Description: Edit the Processing Options 'SORT' Record

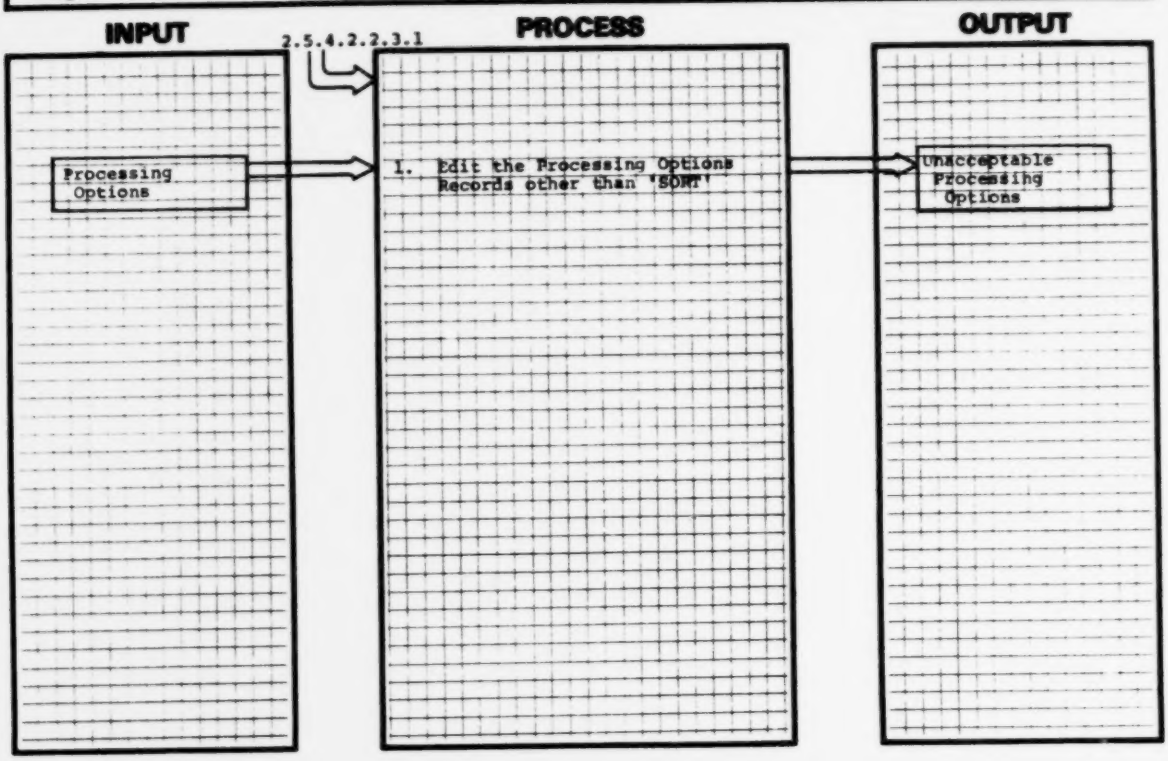


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If VIFI-SORT-SEQUENCE is non-blank then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAOC060	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 of 1

Diagram No.: 2.5.4.2.2.1.2 **Description:** Edit the Processing Options other than 'SORT'

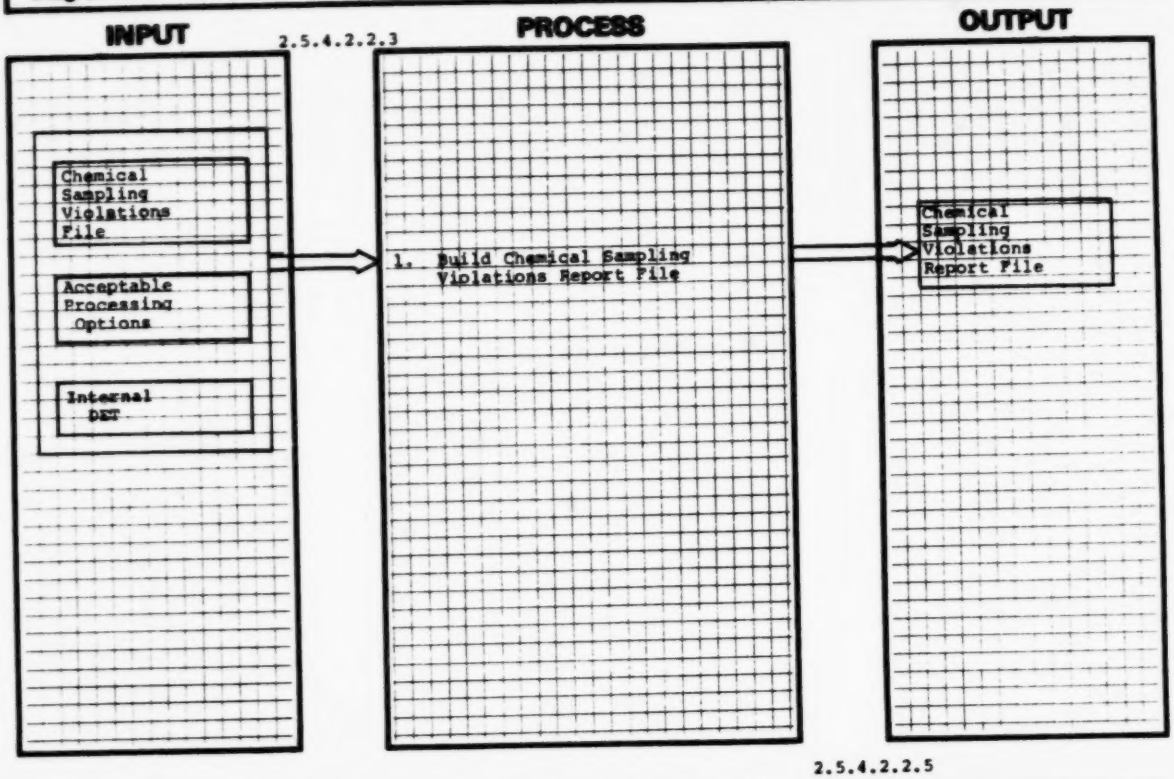


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing will be terminated.		WAQC060	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 of 3

Diagram No.: 2.5.4.2.2.4 **Description:** Build Chemical Sampling Violations Report File



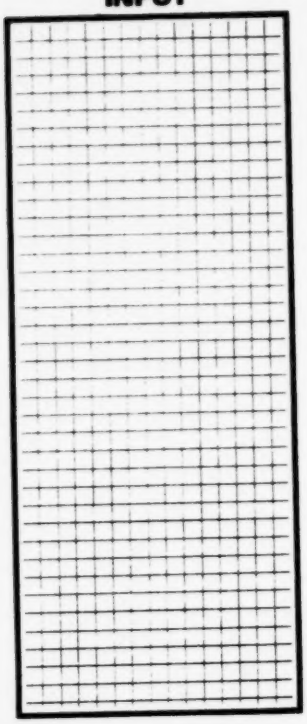
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Chemical Sampling Violations File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Chemical Sampling Violations File record as an array of one character values. b. Match the VIFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Chemical Sampling Violations File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Chemical Sampling Violations File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		WAQC060	213 231 MSIS. 201

MODEL STATE INFORMATION SYSTEM

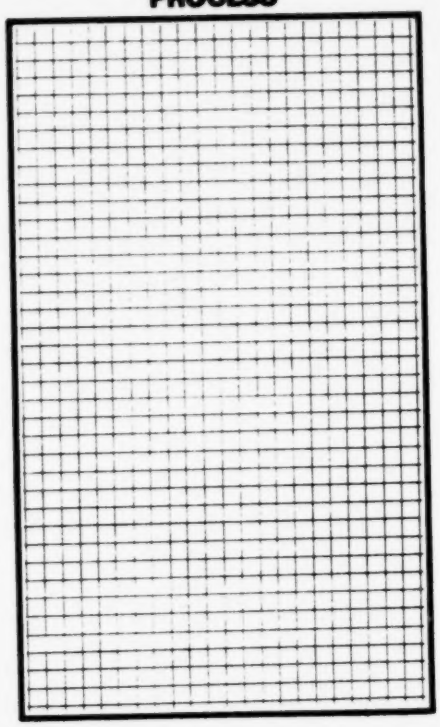
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 2 of 3

Diagram No.: 2.5.4.2.2.4 Description: Build Chemical Sampling Violations Report File

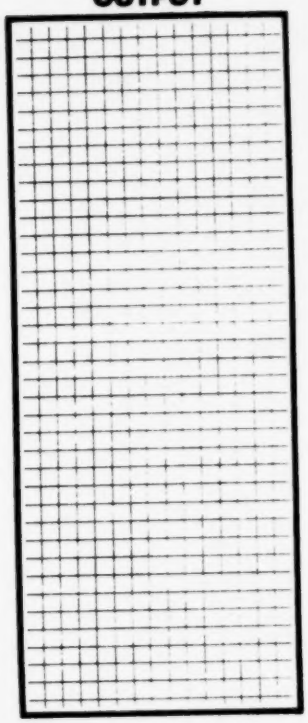
INPUT



PROCESS



OUTPUT



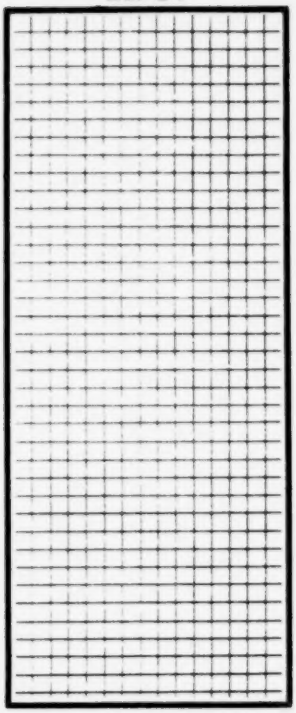
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows: (a) If the VIFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the VIFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the VIFI-SORT-MODE = "A" (ascending) move the value obtained in c. to the proper location in the sort key. If the VIFI-SORT-MODE = "D" (descending) redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the VIFI-SORT-SEQUENCE.		WAQC060	

MODEL STATE INFORMATION SYSTEM

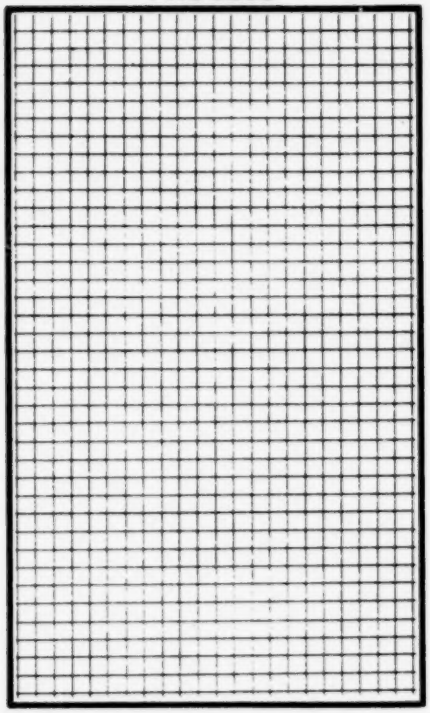
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 3 of 3

Diagram No.: 2.5.4.2.2.4 Description: Build Chemical Sampling Violations Report File

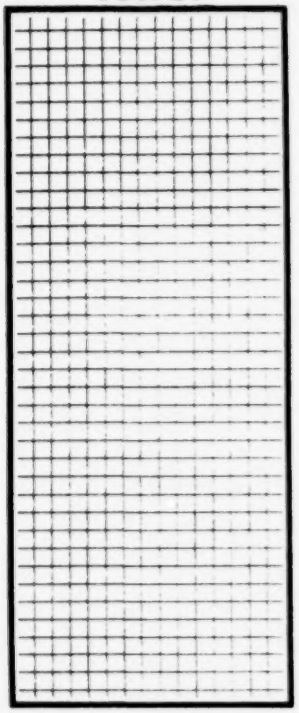
INPUT



PROCESS



OUTPUT

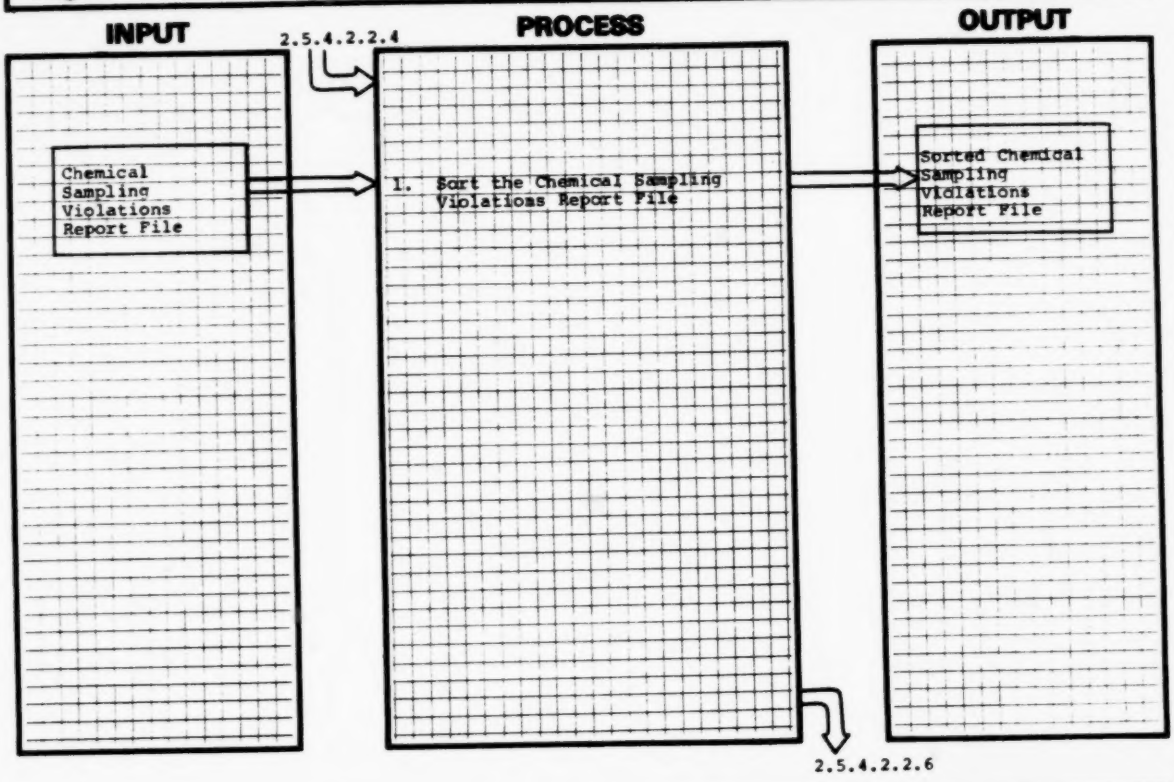


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions			
	NOTE: The first record of the Chemical Sampling Violations File is a header record containing information to be used in the Report Header and is not to be used when building a sort key or in the sort.		WAQC060	
	A Standard Sort Sequence Report will be produced. (See HIPO 2.5.4.2.2.6)			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-20-77 **Page:** 1 **of** 1

Diagram No.: 2.5.4.2.2.5 **Description:** Sort Chemical Sampling Violations Report File

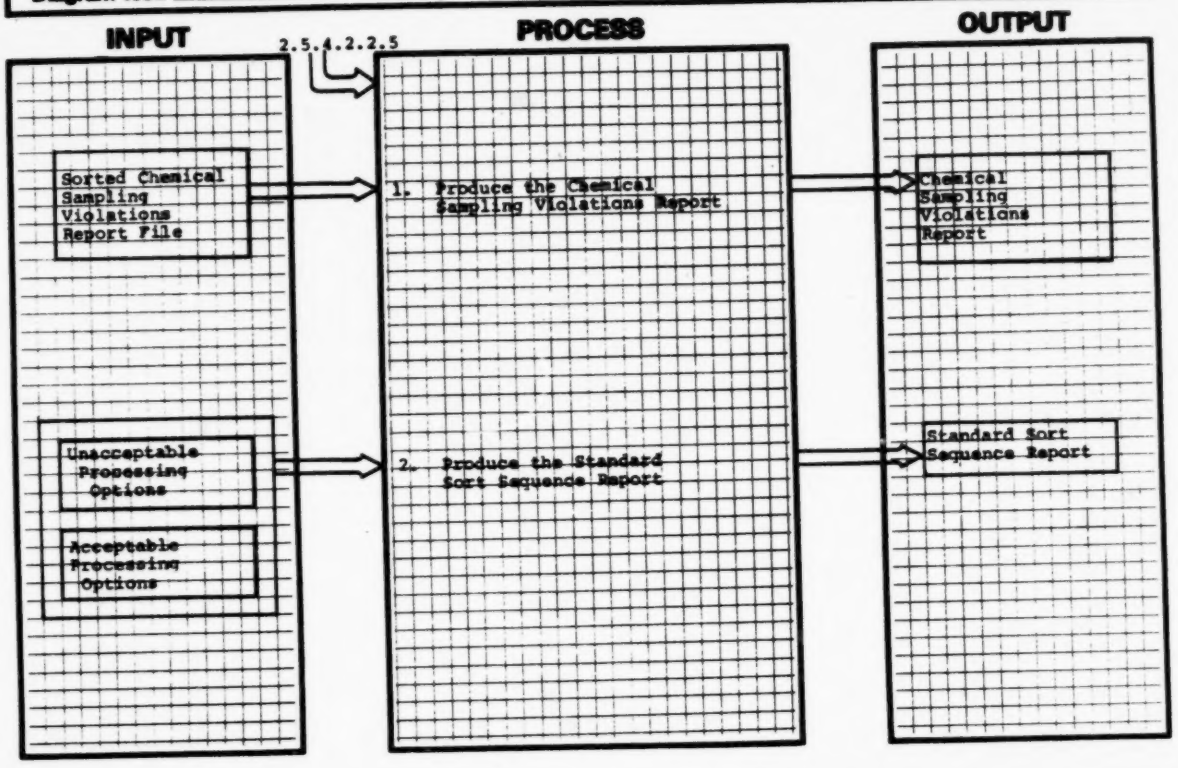


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Chemical Sampling Violations Report File in ascending sequence according to the thirty position sort key.		WAOC060	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-20-77 Page: 1 of 1

Diagram No.: 2.5.4.2.2.6 Description: Produce Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Chemical Sampling Violations Report from data on the Sorted Chemical Sampling Violations Report File. Replace the X's between 'NUMBER' and 'SAMPLES' with either 'REGULAR' if the violation type is '03' or with 'CHECK' if the violation type is '04' and leave the SAMPLING CUT-OFF DATE blank. To determine whether a sample is Federal or State, check the first position of Regulation Level - an 'F' is Federal and 'S' is State. Four violation records will be printed per page. To get the dates for the report use the to and from dates and the report date on the header record of the Chemical Sampling Violations File. Convert all Julian dates, (YYDDD), to calendar dates, (MMDDYY), before printing.		WAQC060	310
2	Produce the Standard Sort Sequence Report. If any processing error messages are printed, the record images and all associated error messages are printed. Also produce the report of the Standard Sort Sequence Report.		WAQC060	MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC070
DATE: February 11, 1977

I. OBJECTIVES:

The objective of this program is to produce the Bacteriological Sampling Violations Report sorted in a user-defined sequence using data from the Bacteriological Sampling Violations File.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Bacteriological Sampling Violations File	VIFI-HEDR-REPT-RECORD VIFI-S-REPT-RECORD	WAQC.213 WAQC.231
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layout:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Bacteriological Sampling Violations Report	WAQC.311
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify that the Header Bacteriological Sampling Violations File Record contains a valid processing date or '000000'. If '000000', it indicates processing is to be terminated without report production.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the Processing Options for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name, and sort mode. Any errors will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Bacteriological Sampling Violations Report File by constructing sort keys using the 'SORT' Processing Options and the Bacteriological Sampling Violations File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Bacteriological Sampling Violations File.

5. Sort the Bacteriological Sampling Violations Report File from Step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Bacteriological Sampling Violations Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Sort Options

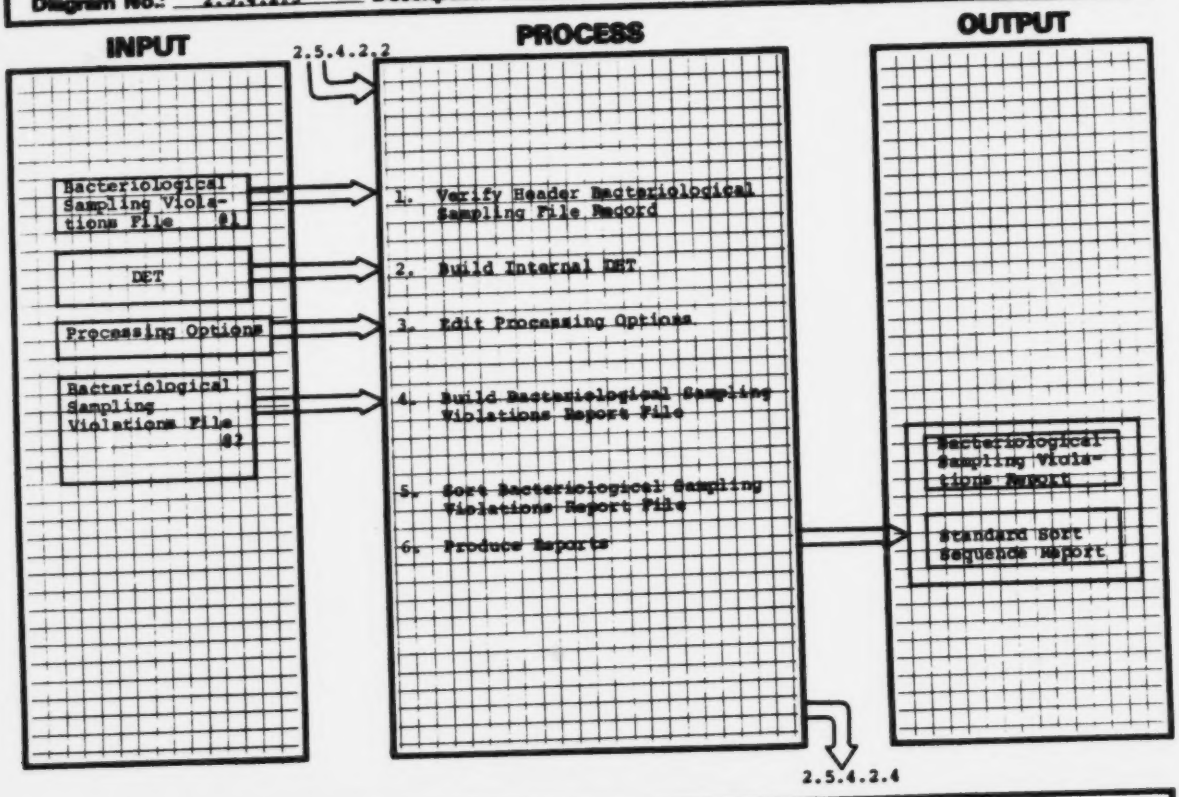
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

Diagram No.: 2.5.4.2.3 Description: Produce Bacteriological Sampling Violations Report

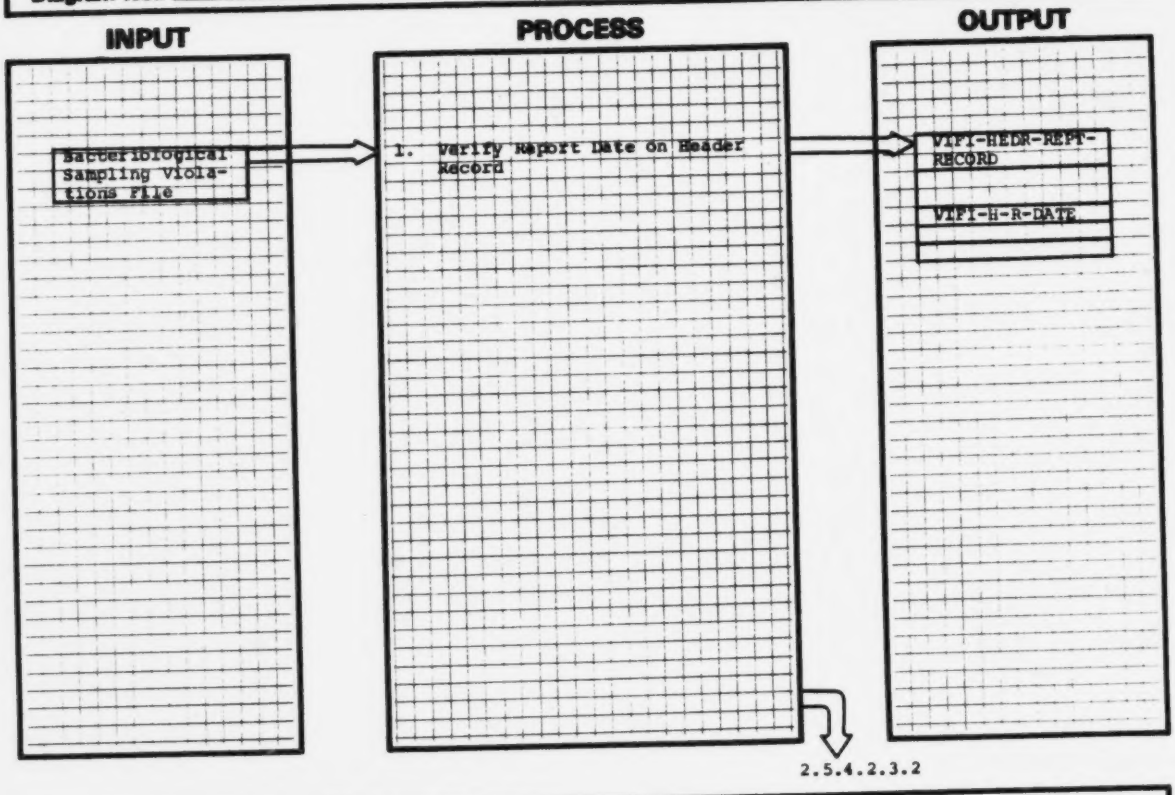


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header Bacteriological Sampling Violations File Record to ensure that processing is to continue.	2.5.4.2.3.1	WAQC070	
2	Build an Internal Data Element Table (DET) from the DET.	2.5.4.2.3.2	WAQC070	
3	Edit the 'SORT' Processing Options. If any Processing Options are in error, processing will be terminated.	2.5.4.2.3.3	WAQC070	
4	Build the Bacteriological Sampling Violations Report File from the Bacteriological Sampling Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 3. If there are no 'SORT' Processing Options records, the sort key is built sequentially.	2.5.4.2.3.4	WAQC070	
5	Sort the Bacteriological Sampling Violations Report File by a user-defined sequence specified by the 'SORT' Processing Options or by the sequentially created sort key.	2.5.4.2.3.5	WAQC070	
6	Produce the Bacteriological Sampling Violations Report by printing data from the Sorted Bacteriological Sampling Violations Report File. Produce the Standard Sort Sequence Report which will contain either the sort sequence report or the Processing Options errors.	2.5.4.2.3.6	WAQC070	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

Diagram No.: 2.5.4.2.3.1 Description: Verify Header Bacteriological Sampling Violations File Record

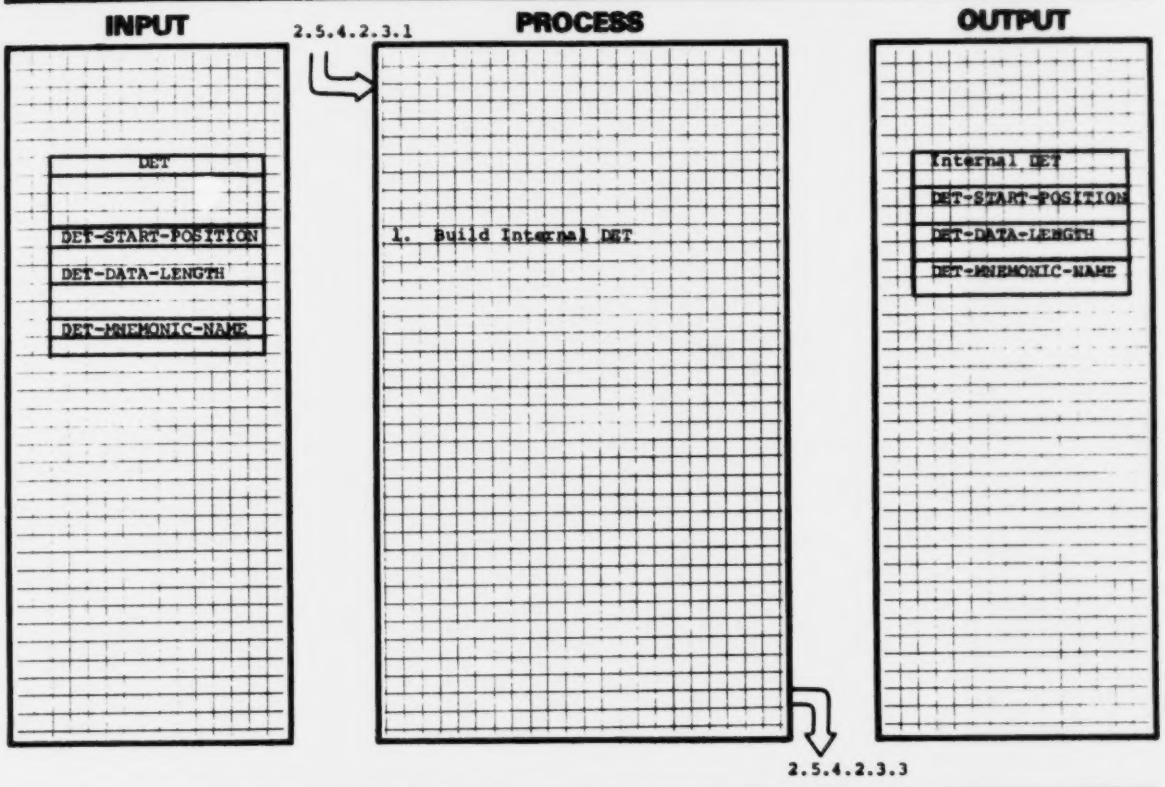


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Bacteriological Sampling Violations File is written during execution of program WAQC034 and carries information from the 'PROC' record processed by program WAQC025. If, for any reason, WAQC034 terminated abnormally, the field VIFI-H-R-DATE will contain '000000' signifying that this processing is to also terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for 'LOW VALUES'.		WAQC070	213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1

Diagram No.: 2.5.4.2.3.2 **Description:** Build Internal DET

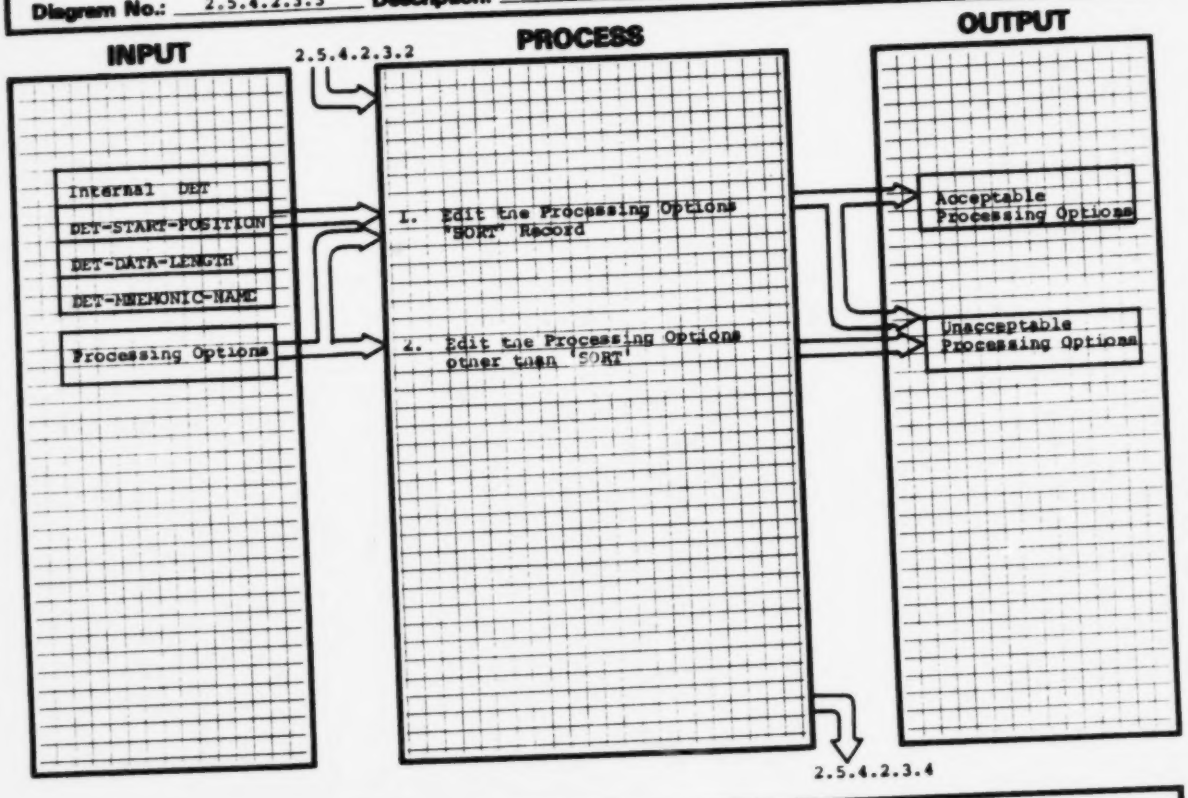


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of VI. Only the file start position, data element length, and data element mnemonic are used.		WAQC070	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

Diagram No.: 2.5.4.2.3.3 Description: Edit Processing Options

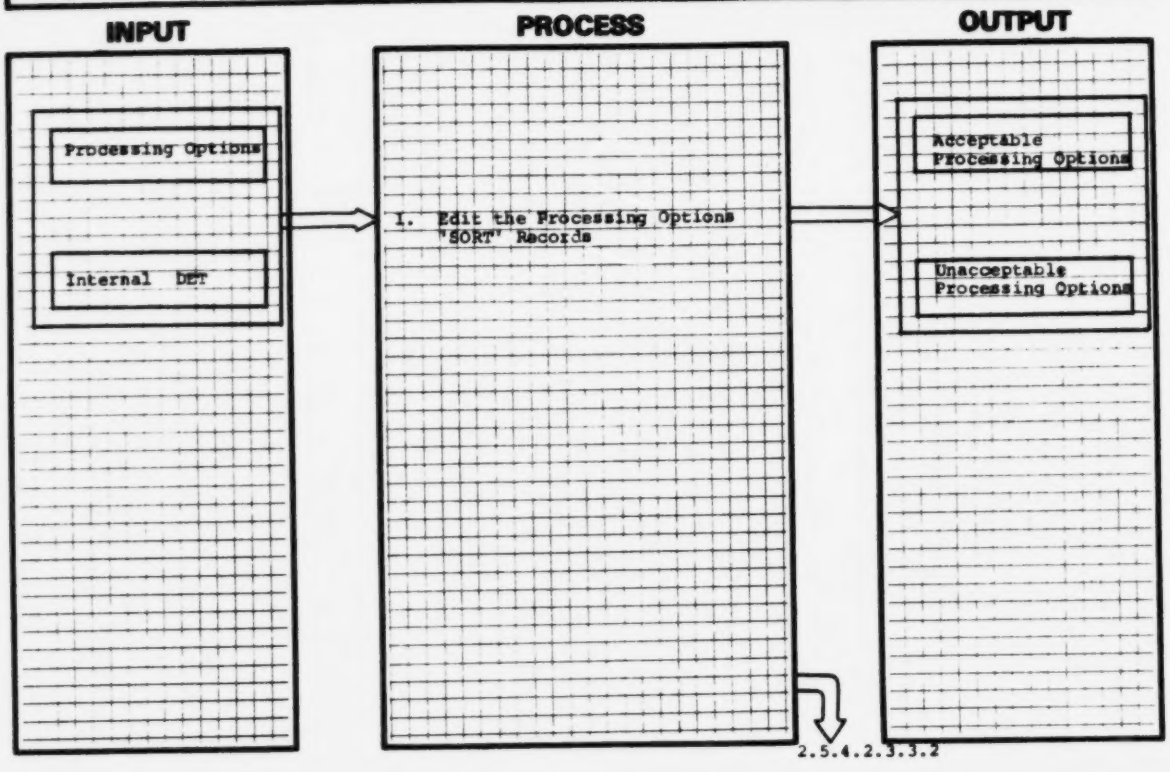


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) with 'SORT' in positions 1-4.	2.5.4.2.3.3.1	WAQC071	
2	Edit the Processing Options other than 'SORT'. If found, it is in error.	2.5.4.2.3.3.2	WAQC071	
	Note: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

Diagram No.: 2.5.4.2.3.3.1 Description: Edit the Processing Options 'SORT' Records

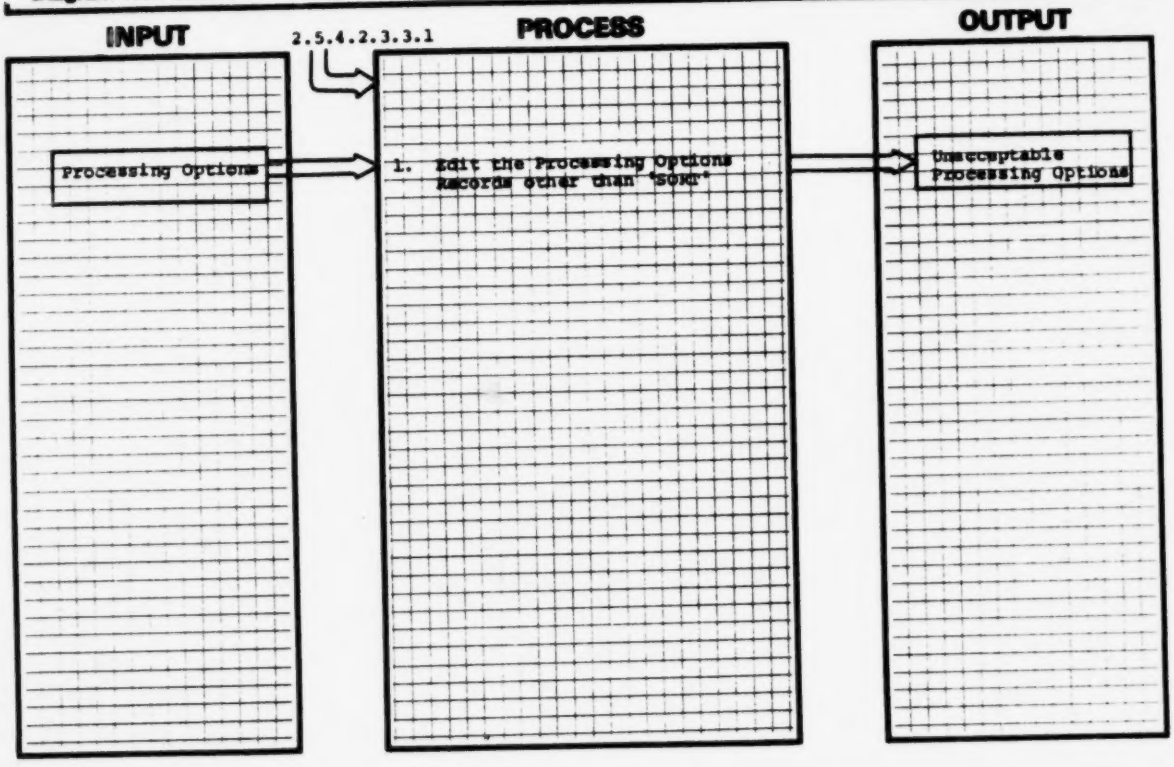


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more 'SORT' Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC070	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

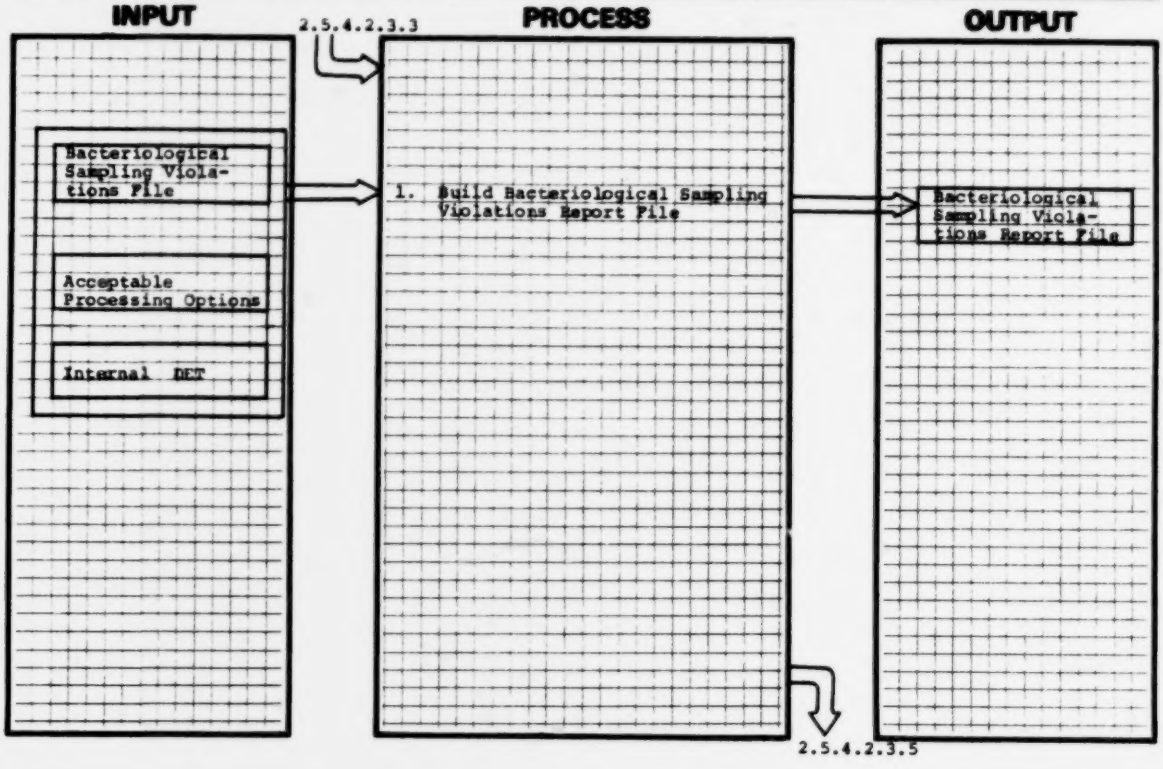
Diagram No.: 2.5.4.2.3.3.2 Description: Edit the Processing Options Other than 'SORT'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing will be terminated.		WAQC070	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 **of** 3
Diagram No.: 2.5.4.2.3.4 **Description:** Build Bacteriological Sampling Violations Report File



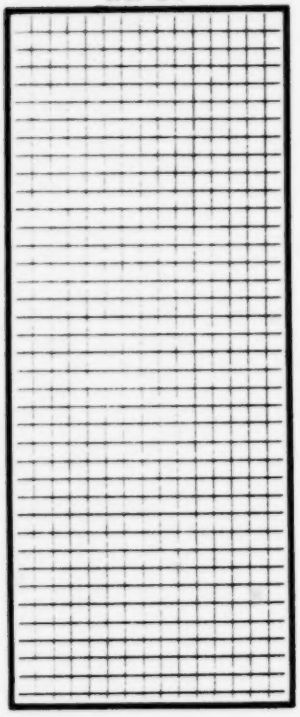
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Bacteriological Sampling Violations File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Bacteriological Sampling Violations File record as an array of one character values. b. Match the VIFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Bacteriological Sampling Violations File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Bacteriological Sampling Violations File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alpnanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		MAQC070	213 231 MSI6. 201

MODEL STATE INFORMATION SYSTEM

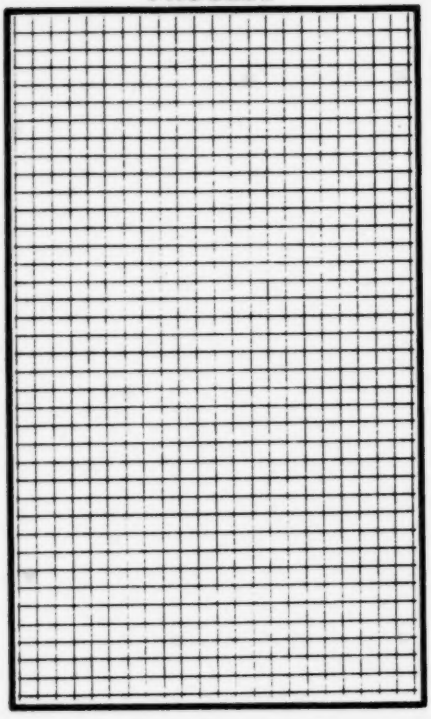
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 2 of 3

Diagram No.: 2.5.4.2.3.4 Description: Build Bacteriological Sampling Violations Report File

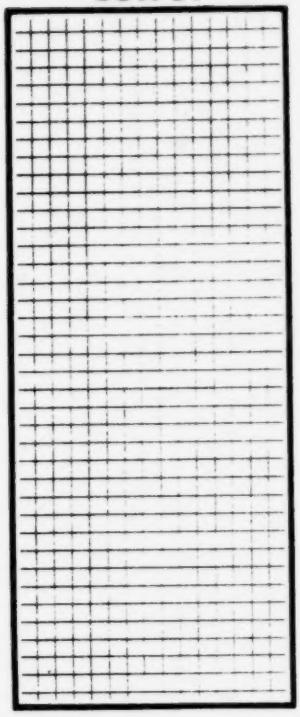
INPUT



PROCESS



OUTPUT



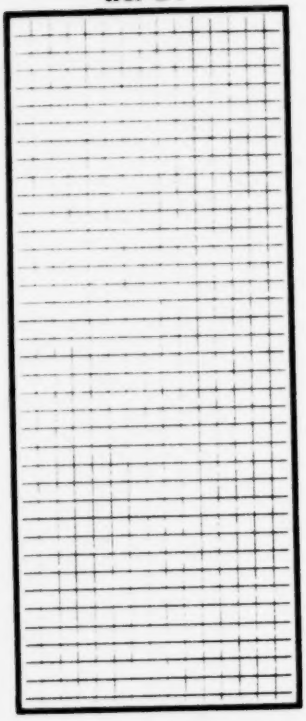
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case, all possible values in the array must be checked as follows: (a) If the VIFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the VIFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the VIFI-SORT-MODE = "A" (ascending), move the value obtained in c. to the proper location in the sort key. If the VIFI-SORT-MODE = "D" (descending), redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field, and move the result into the proper location in the sort key. The proper location is determined by the VIFI-SORT-SEQUENCE. NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be:		WAQC070	

MODEL STATE INFORMATION SYSTEM

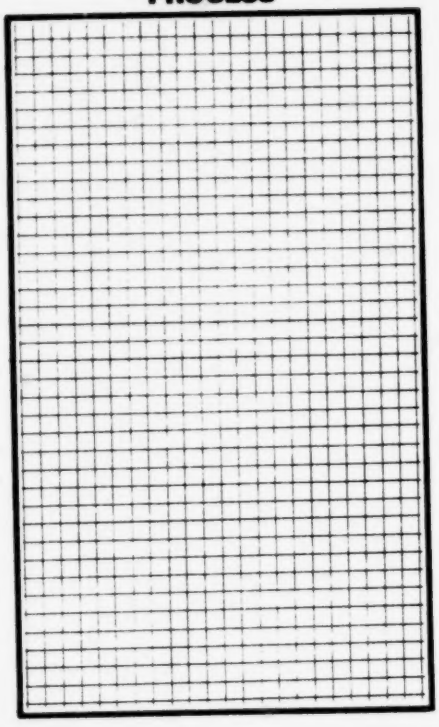
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 3 of 3

Diagram No.: 2.5.4.2.3.4 Description: Build Bacteriological Sampling Violations Report File

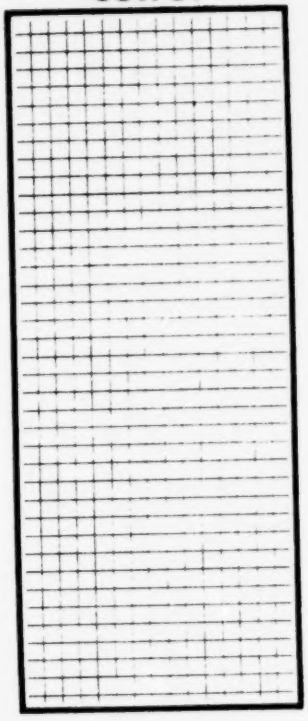
INPUT



PROCESS



OUTPUT

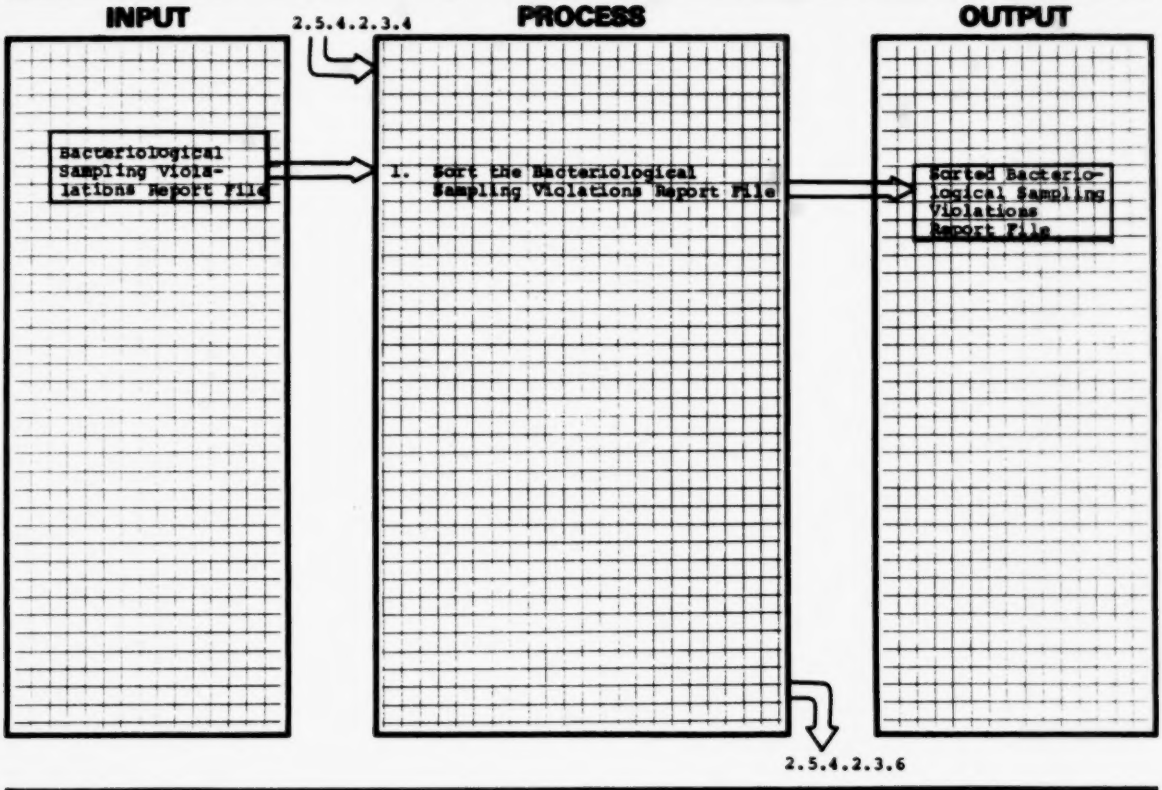


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	000000000000000000000000099999 30 positions The first record of the Bacteriological Sampling Violations File is a header record containing information to be used in the Report header and is not to be used when building a sort key or in the sort. A Standard Sort Sequence Report will be produced. (See HIPO 2.5.4.2.3.6)		WAQC070	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

Diagram No.: 2.5.4.2.3.5 Description: Sort Bacteriological Sampling Violations Report File

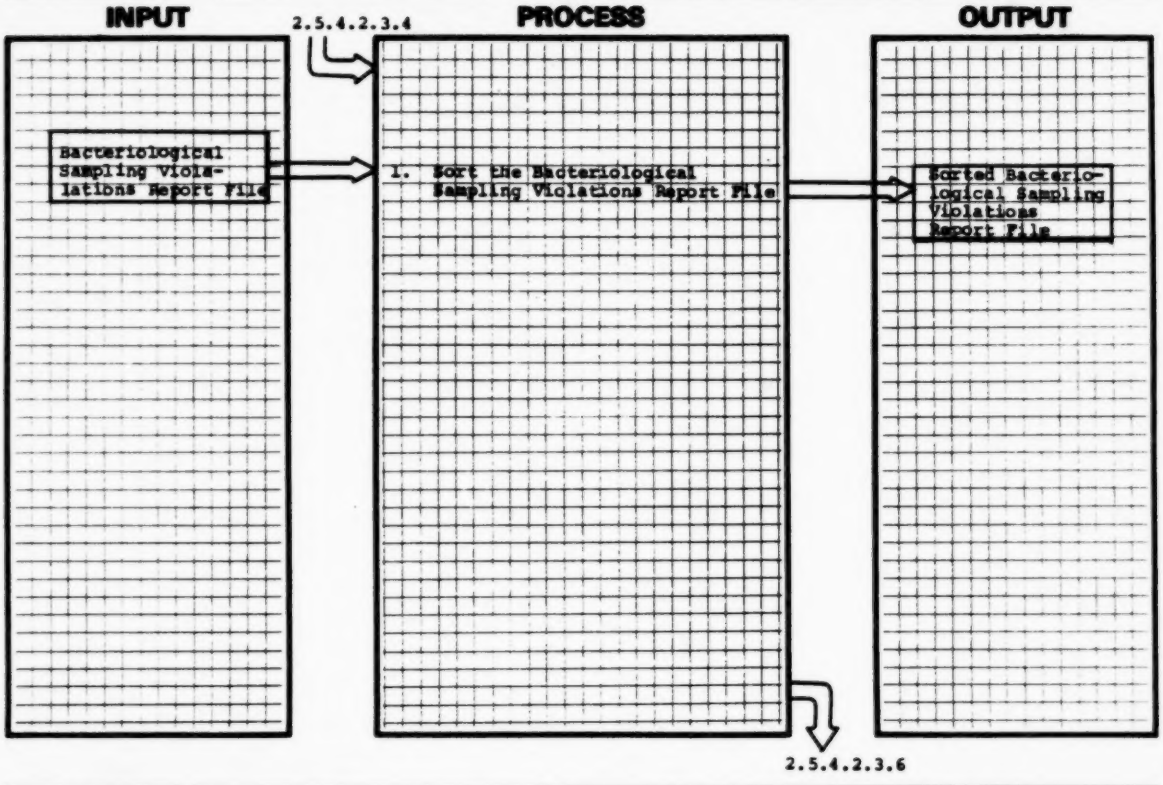


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Bacteriological Sampling Violations Report File in ascending sequence according to the thirty position sort key.		WAQC070	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

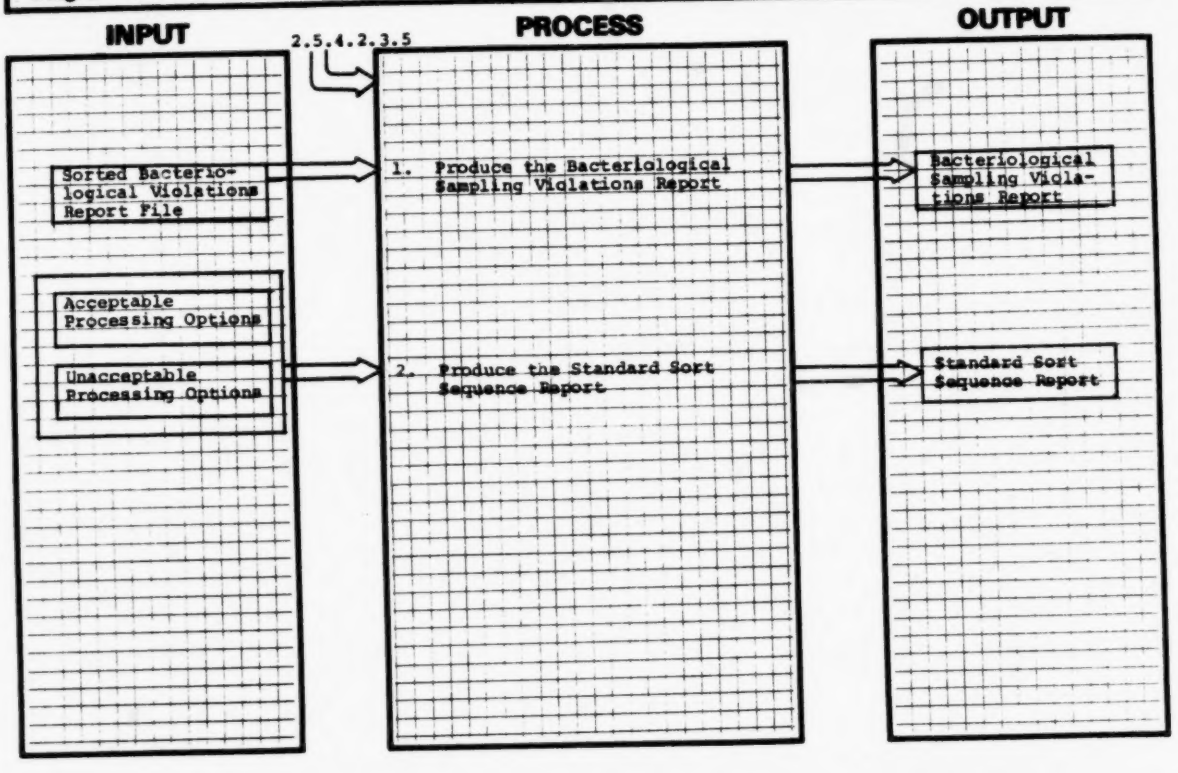
Diagram No.: 2.5.4.2.3.5 Description: Sort Bacteriological Sampling Violations Report File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Bacteriological Sampling Violations Report File in ascending sequence according to the thirty position sort key.		WAQC070	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1
Diagram No.: 2.5.4.2.3.6 **Description:** Produce Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Bacteriological Sampling Violations Report from data on the Sorted Bacteriological Sampling Violations Report File. Replace the X's between 'NUMBER' and 'SAMPLES' with either 'REGULAR' if the violation type is '03' or with 'CHECK' if the violation type is '04' and leave the SAMPLING CUT-OFF DATE blank. To determine whether a sample is Federal or State, check the first position of Regulation Level; an 'F' is Federal, an 'S' is State. Four violation records will be printed per page. To get the dates for the report, use the to and from dates and the report date on the header record of the Bacteriological Sampling Violations File. Convert all Julian dates, (YYDDD), to calendar dates, (MMDDYY), before printing. Compliance cycle will also be from the header record.		WAQC070	311
2	Produce the Standard Sort Sequence Report. If any processing error messages are printed, the record images and all associated error messages are printed. Also produce the report of the Standard Sort Sequence Report.		WAQC070	MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC061
DATE: February 11, 1977

I. OBJECTIVES:

The objective of this program is to produce the Radiological Sampling Violations Report sorted in a user-defined sequence using data from the Radiological Sampling Violations File.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Radiological Sampling Violations File	VIFI-HEDR-REPT-RECORD VIFI-S-REPT-RECORD	WAQC.213 WAQC.231
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layout:

Not applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Radiological Sampling Violations Report	WAQC.313
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify that the Radiological Sampling Violations File Header Record contains a valid processing date or '000000'. If it is '000000' this indicates that processing is to be terminated without report production.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the 'SORT' Processing Options records for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Radiological Sampling Violations Report File by constructing sort keys using the 'SORT' Processing Options and the Radiological Sampling Violations File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Radiological Sampling Violations File.

5. Sort the Radiological Sampling Violations Report File from Step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Radiological Sampling Violations Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Sort Options

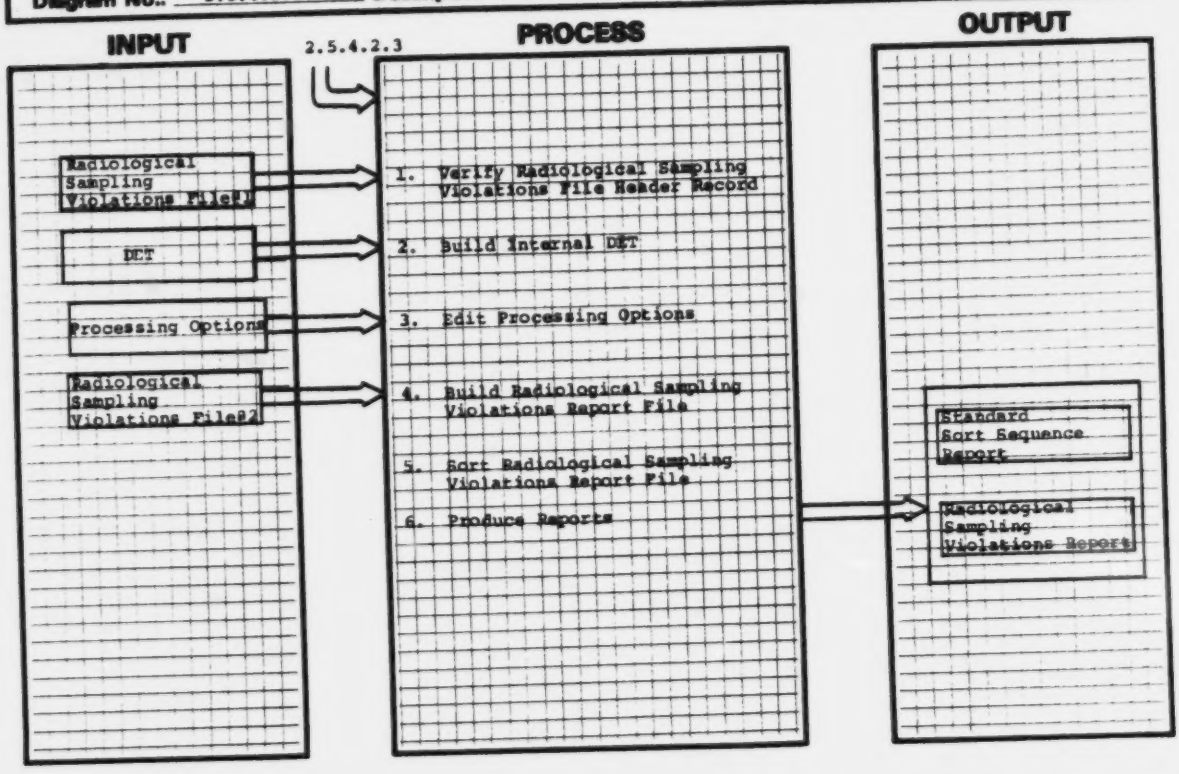
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1

Diagram No.: 2.5.4.2.4 **Description:** Produce Radiological Sampling Violations Report

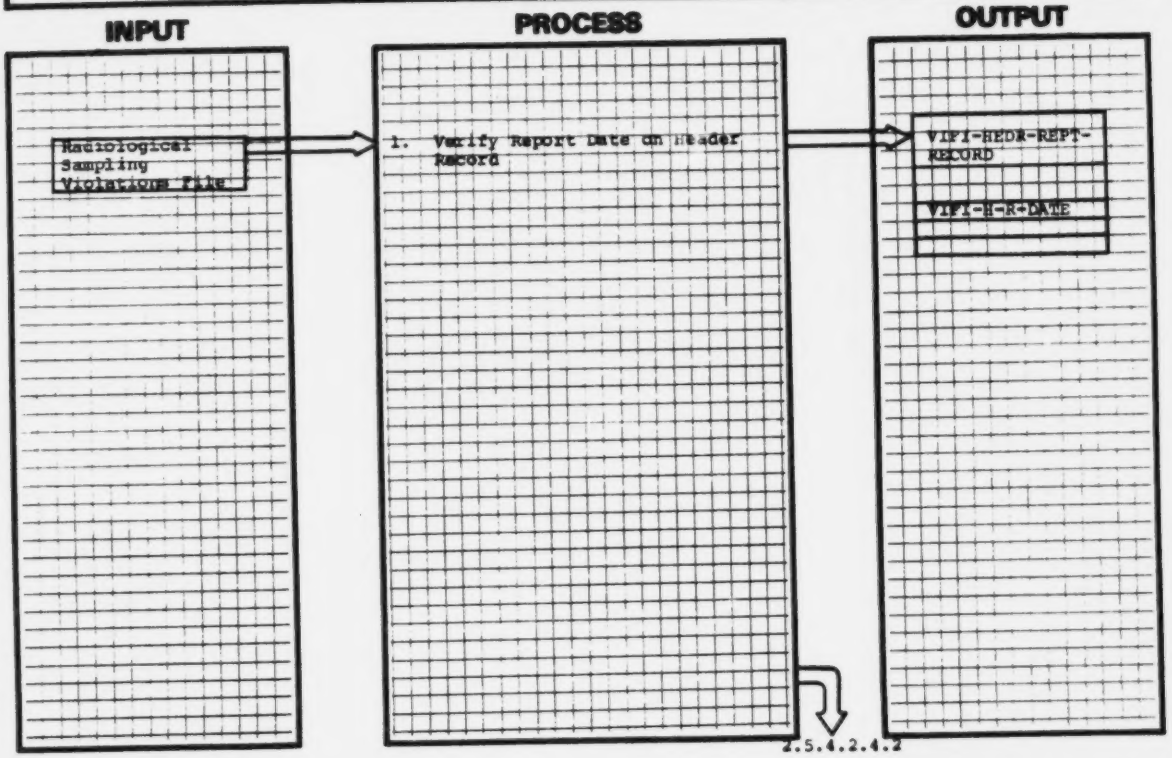


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Radiological Sampling Violations File Header Record to ensure that processing is to continue.	2.5.4.2.4.1	WAQC061	
2	Build an Internal Data Element Table (DET) from the DET	2.5.4.2.4.2	WAQC061	
3	Edit the 'SORT' Processing Options. If any Processing Options are in error, processing will be terminated.	2.5.4.2.4.3	WAQC061	
4	Build the Radiological Sampling Violations Report File from the Radiological Sampling Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 2. If there are no 'SORT' Processing Options, the sort key is built sequentially.	2.5.4.2.4.4	WAQC061	
5	Sort the Radiological Sampling Violations Report File by a user-defined sequence specified by the 'SORT' Processing Options or by the sequentially created sort key.	2.5.4.2.4.5	WAQC061	
6	Produce the Radiological Sampling Violations Report by printing data from the Sorted Radiological Sampling Violations Report File. Produce the Standard Sort Sequence Report which will contain either the sort sequence report or the Processing Options errors.	2.5.4.2.4.6	WAQC061	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 **of** 1

Diagram No.: 2.5.4.2.4.1 **Description:** Verify Radiological Sampling Violations File Header Record

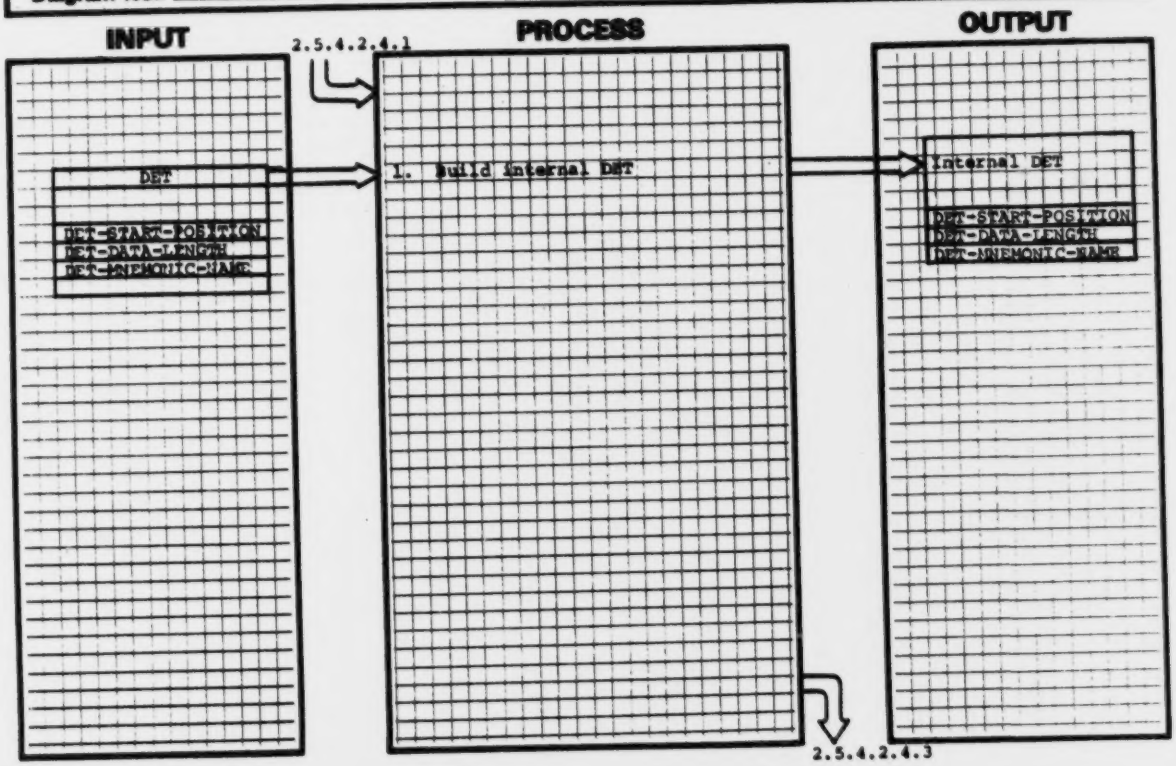


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Radiological Sampling Violations File is written during execution of program WAQC035 and carries information from the 'PROC' record processed by program WAQC025. If, for any reason, WAQC035 terminated abnormally, the field VIFI-H-R-DATE will contain '000000' signifying that this processing is to also terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for "LOW VALUES".		WAQC061	213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 1

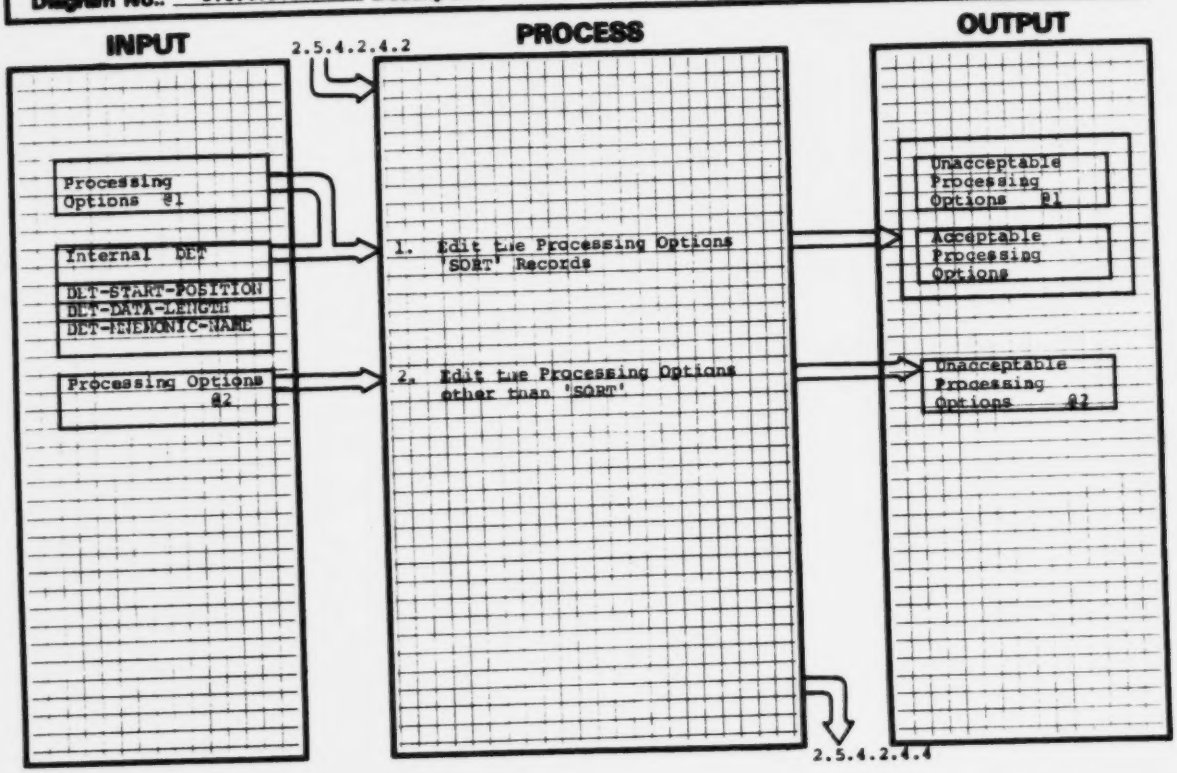
Diagram No.: 2.5.4.2.4.2 Description: Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of VI. Only the file start position, data element length, and data element mnemonic are used.		WAQC061	MSIS. 201

MODEL STATE INFORMATION SYSTEM

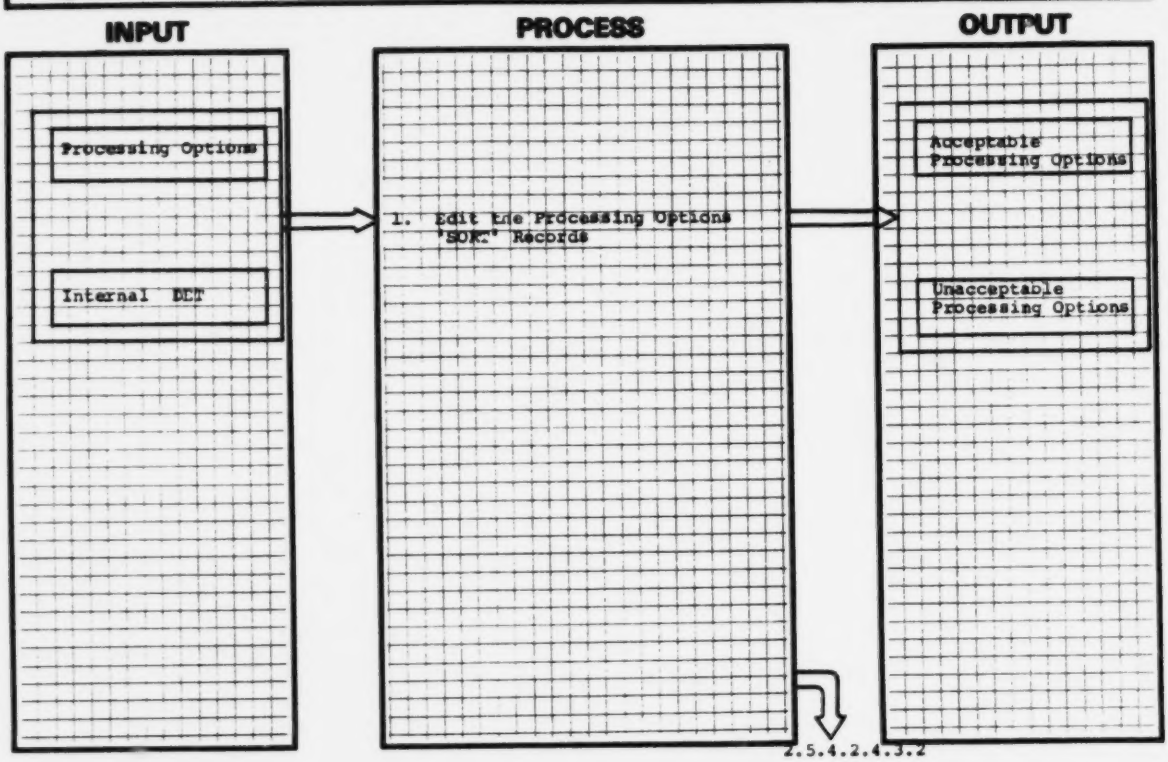
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1
Diagram No.: 2.5.4.2.4.3 **Description:** Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'SORT' in positions 1-4.	2.5.4.2.4.3.1	WAQC061	
2	Edit for Processing Options other than 'SORT'. If found, it is an error. Note: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.	2.5.4.2.4.3.2	WAQC061	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1
Diagram No.: 2.5.4.2.4.3.1 **Description:** Edit the Processing Options 'SORT' Records

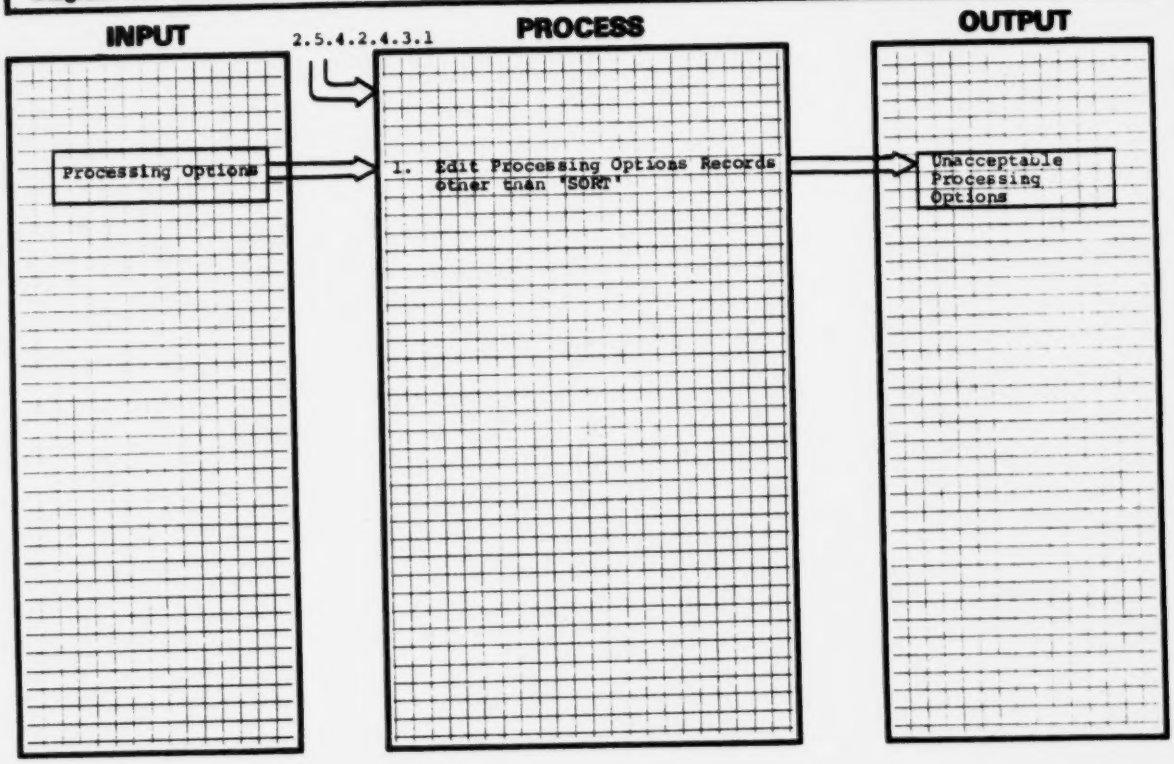


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the record as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC061	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 **of** 1

Diagram No.: 2.5.4.2.4.3.2 **Description:** Edit tne Processing Options Other tnan 'SORT'

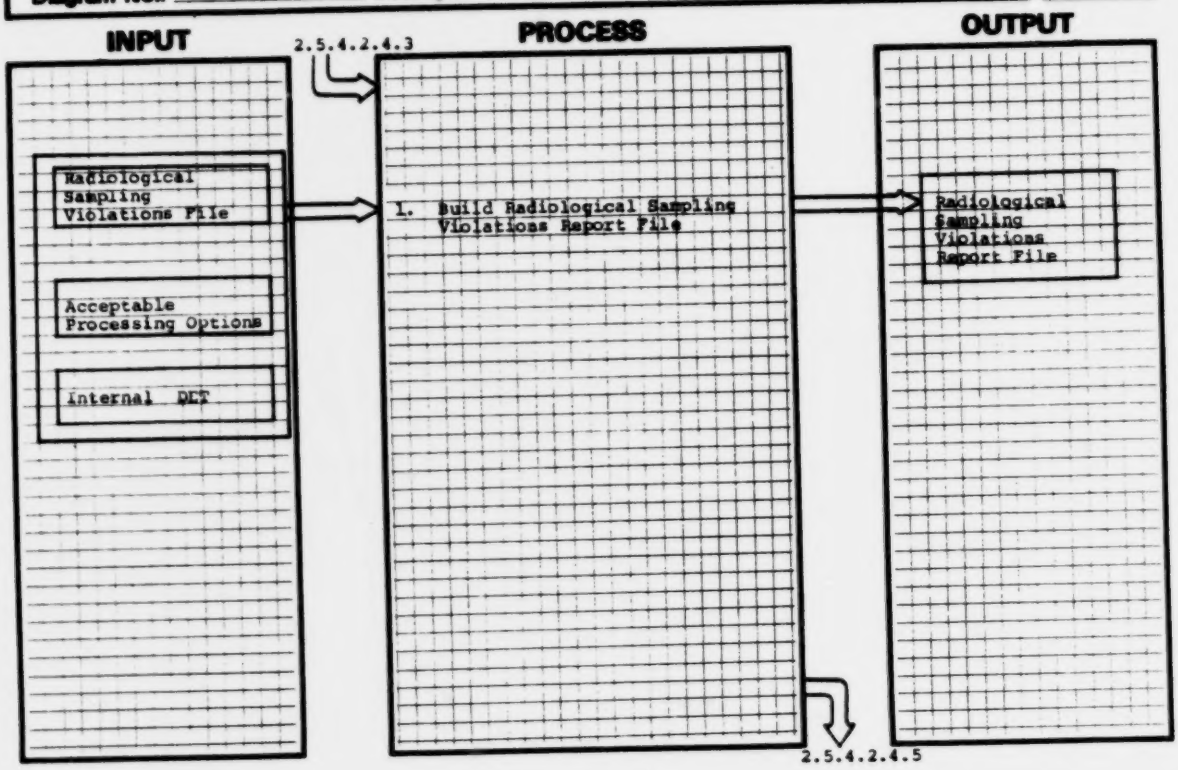


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for otner tnan 'SORT' in positions 1-4. If found, tne message 'ERROR-RECORD TYPE NOT SORT' is moved to tne error message area and processing will be terminated.		WAQC061	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 1 of 3

Diagram No.: 2.5.4.2.4.4 Description: Build Radiological Sampling Violations Report File

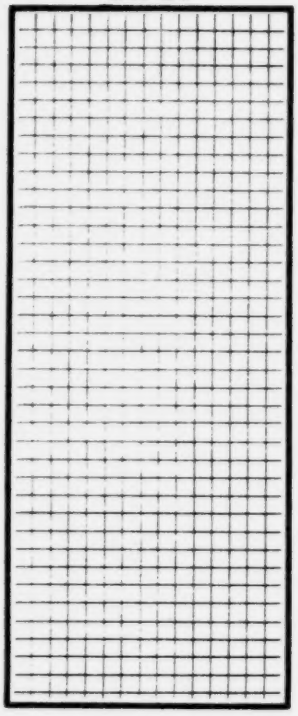


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Radiological Sampling Violations File based on the criteria on the "SORT" Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Radiological Sampling Violations File record as an array of one character values. b. Match the VIFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Radiological Sampling Violations File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Radiological Sampling Violations File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		WAQC061	213 231 MSIS. 201

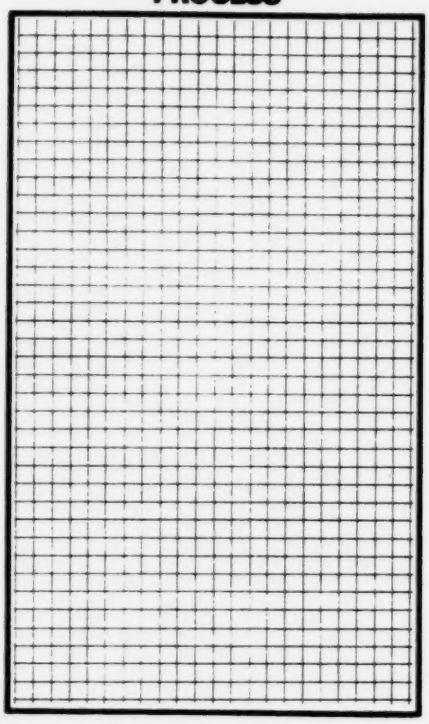
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/11/77 Page: 2 of 3
Diagram No.: 2.5.4.2.4.4 Description: Build Radiological Sampling Violations Report File

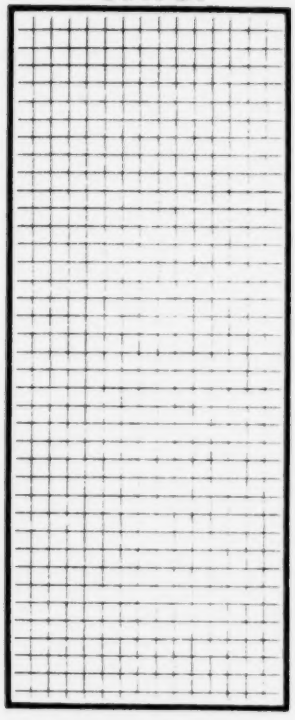
INPUT



PROCESS



OUTPUT

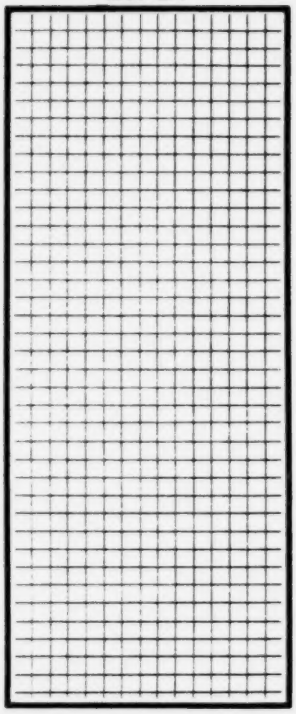


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case, all possible values in the array must be checked as follows: (a) If the VIFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the VIFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed.		WAQC061	
	(3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key.			
	d. If the VIFI-SORT-MODE = "A" (ascending), move the value obtained in c. to the proper location in the sort key. If the VIFI-SORT-MODE = "D", redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the VIFI-SORT-SEQUENCE.			

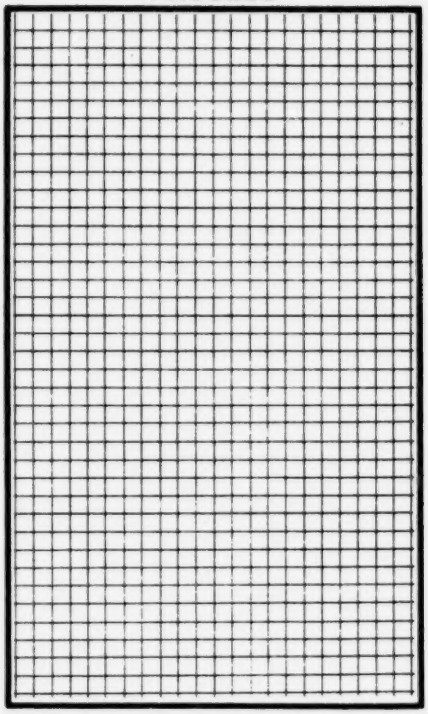
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 3 **of** 3
Diagram No.: 2.5.4.2.4.4 **Description:** Build Radiological Sampling Violations Report File

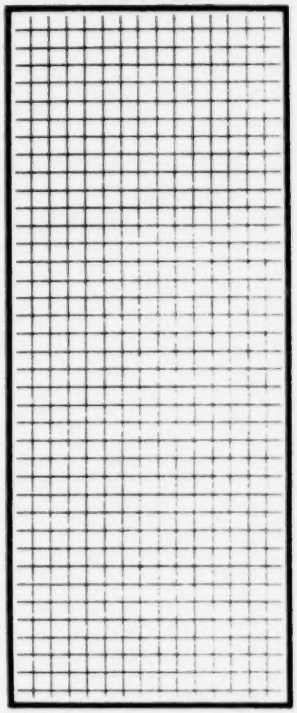
INPUT



PROCESS



OUTPUT

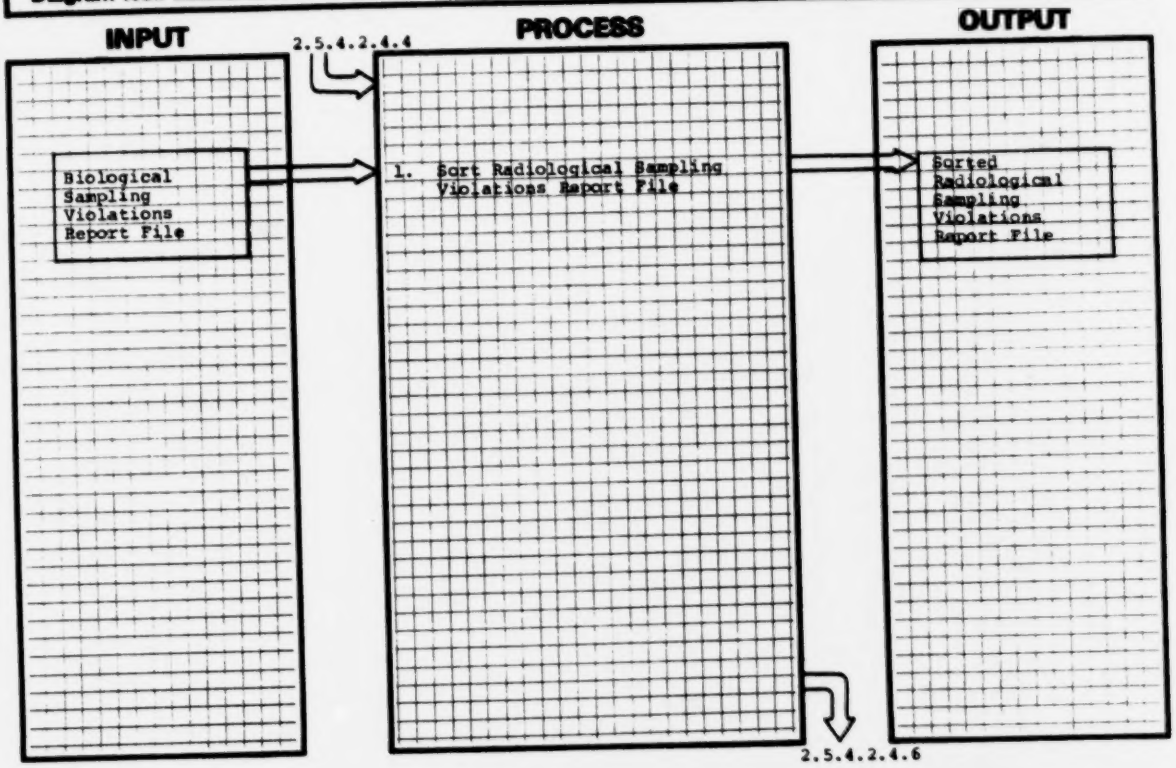


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Note: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions The first record of the Radiological Sampling Violations File is a header record containing information to be used in the report header and is not to be used when building a sort key or in the sort. A Standard Sort Sequence Report will be produced (see HIPO 2.5.4.2.4.6).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1

Diagram No.: 2.5.4.2.4.5 **Description:** Sort Radiological Sampling Violations Report File

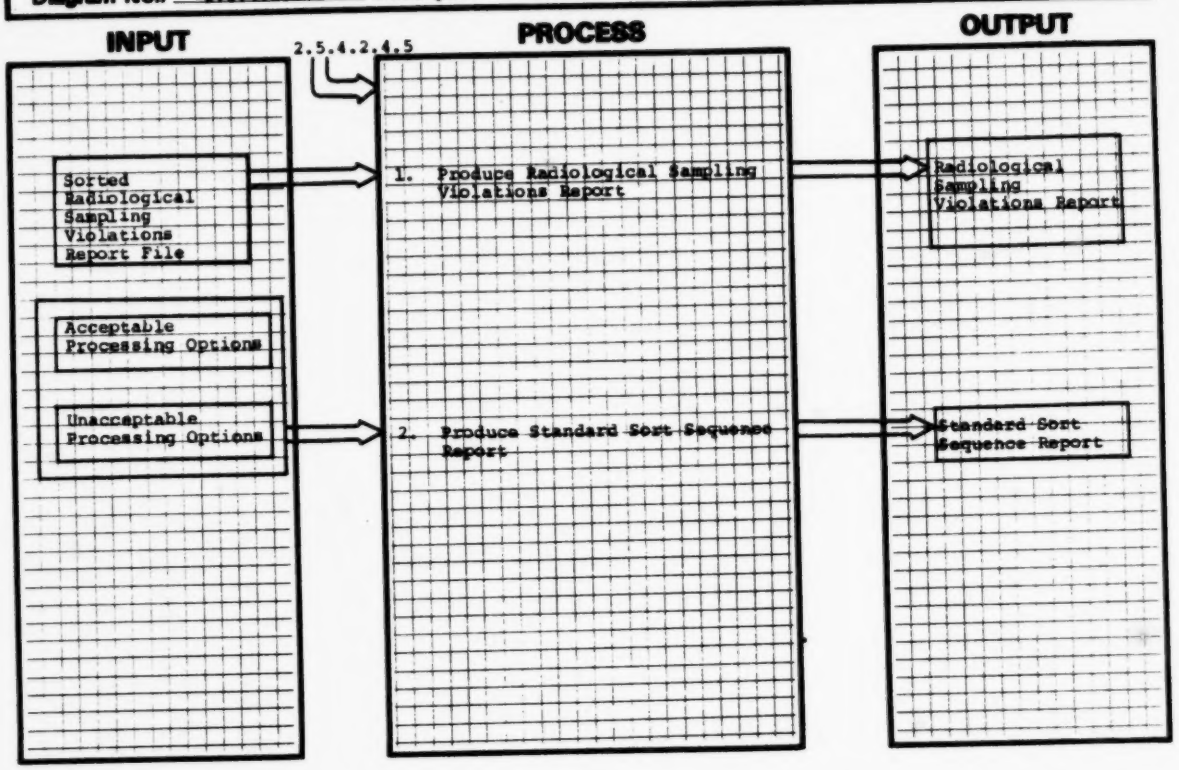


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Radiological Sampling Violations Report File in ascending sequence according to the thirty position sort key.		WAQC061	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/11/77 **Page:** 1 of 1

Diagram No.: 2.5.4.2.4.6 **Description:** Produce Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Radiological Sampling Violations Report from data on the Sorted Radiological Sampling Violations Report File. Replace the X's between 'NUMBER' and 'SAMPLES' with either 'REGULAR' if the Violation Type is '03' or with 'CHECK' if the Violation Type is '04' and leave the SAMPLING CUT-OFF DATE blank. To determine whether a sample is Federal or State, check the first position of Regulation Level - an 'F' is Federal, an 'S' is State. Four Violation records will be printed per page. To get the dates for the Report, use the To and From dates and the report date on the header record of the Radiological Sampling Violations File. Convert all Julian dates, (YYDDD), to calendar dates, (MMDDYY), before printing.		WAQC061	313
2	Produce the Standard Sort Sequence Report. If any Processing Options error messages are printed, the record images and all associated error messages are printed. Also produce the report of the Standard Sort Sequence Report.		WAQC061	MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC090
DATE: 2/11/77

I. OBJECTIVES:

The objective of this program is to produce the Operation Report Violations Report sorted in a user-defined sequence using data from the Operation Report Violations File.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Operation Report Violations File	VIFI-HEDR-REPT-RECORD VIFI-R-REPT-RECORD	WAQC.213 WAQC.232
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layout:

Not Applicable.

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Operation Report Violations Report	WAQC.325
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable.

IV. FUNCTIONS:

1. Verify that the Header Operation Report Violations File Record contains a valid processing date or '000000'. If '000000' that indicates that processing is to be terminated without report production.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the 'SORT' Processing Options records for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name, and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Operation Report Violations Report File by constructing sort keys using the 'SORT' Processing Options and the Operation Report Violations File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Operation Report Violations File.

5. Sort the Operation Report Violations Report File from the previous step into the sequence specified by the 'SORT' processing options or the sequentially created sort key.

6. Produce the Operation Report Violations Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Sort Options

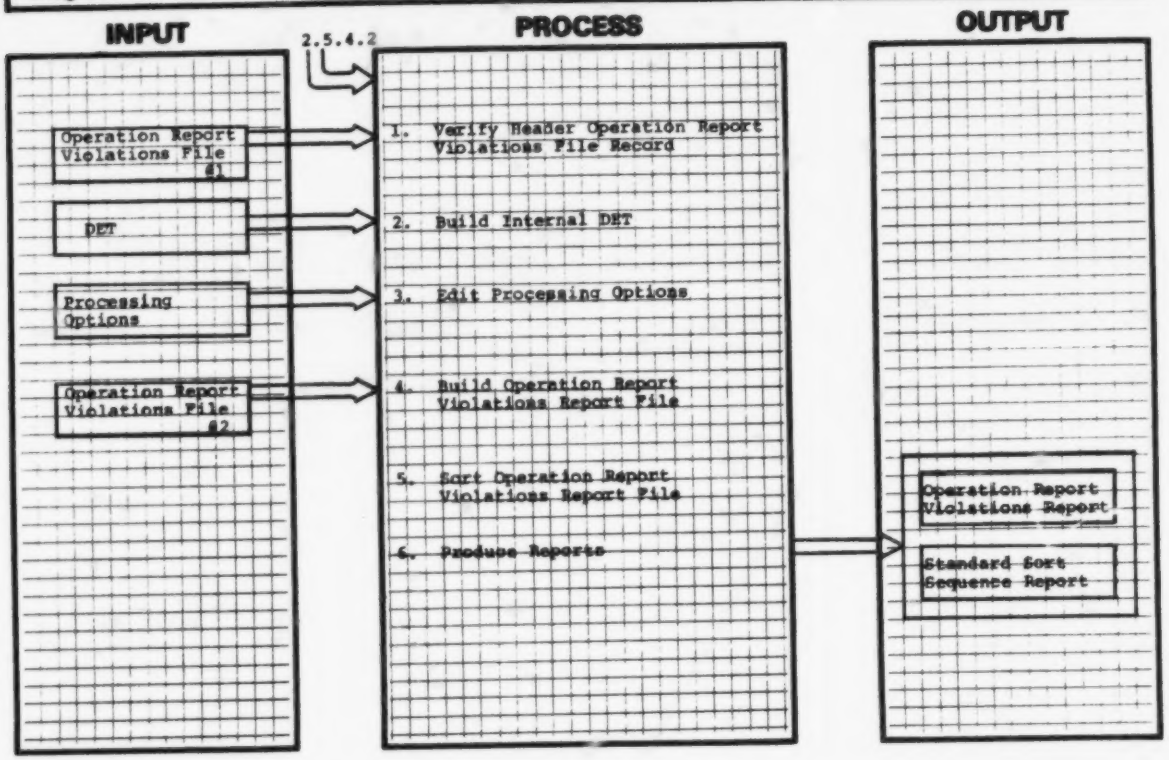
B. Data Element Descriptions:

Not Applicable.

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 of 1

Diagram No.: 2.5.4.3 **Description:** Produce Operation Report Violations Report

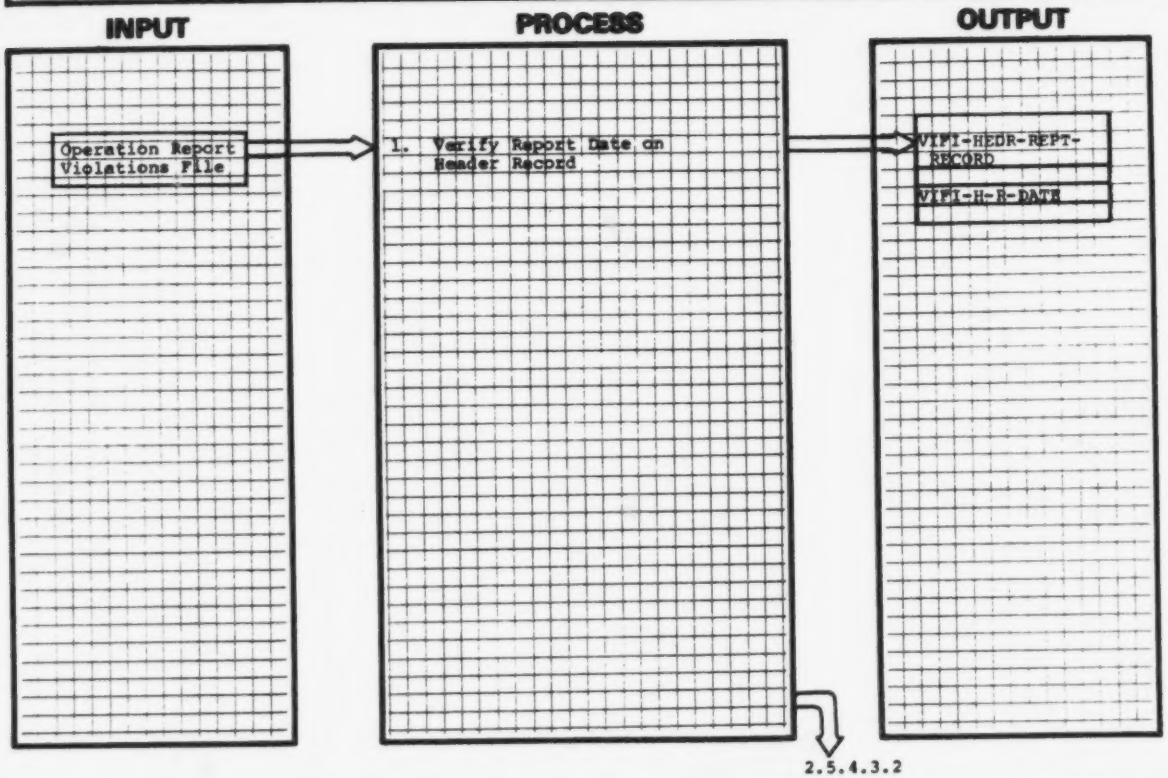


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Header Operation Report Violations File Record to ensure that processing is to continue.	2.5.4.3.1	WAQC090	
2	Build an internal Data Element Table (DET) from the DET.	2.5.4.3.2	WAQC090	
3	Edit the 'SORT' Processing Options records. If any Processing Options are in error, processing will be terminated.	2.5.4.3.3	WAQC090	
4	Build the Operation Report Violations Report File from the Operation Report Violations File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 3. If there are no 'SORT' Processing Options records, the sort key is built sequentially.	2.5.4.3.4	WAQC090	
5	Sort the Operation Report Violations Report File by a user-defined sequence specified by the 'SORT' Processing Options or by the sequentially created sort key.	2.5.4.3.5	WAQC090	
6	Produce the Operation Report Violations Report by printing data from the Sorted Operation Report Violations Report File. Produce the Standard Sort Sequence Report, which will contain either the Sort Sequence Report or the Processing Options errors.	2.5.4.3.6	WAQC090	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 **of** 1

Diagram No.: 2.5.4.3.1 **Description:** Verify Header Operation Report Violations File Record

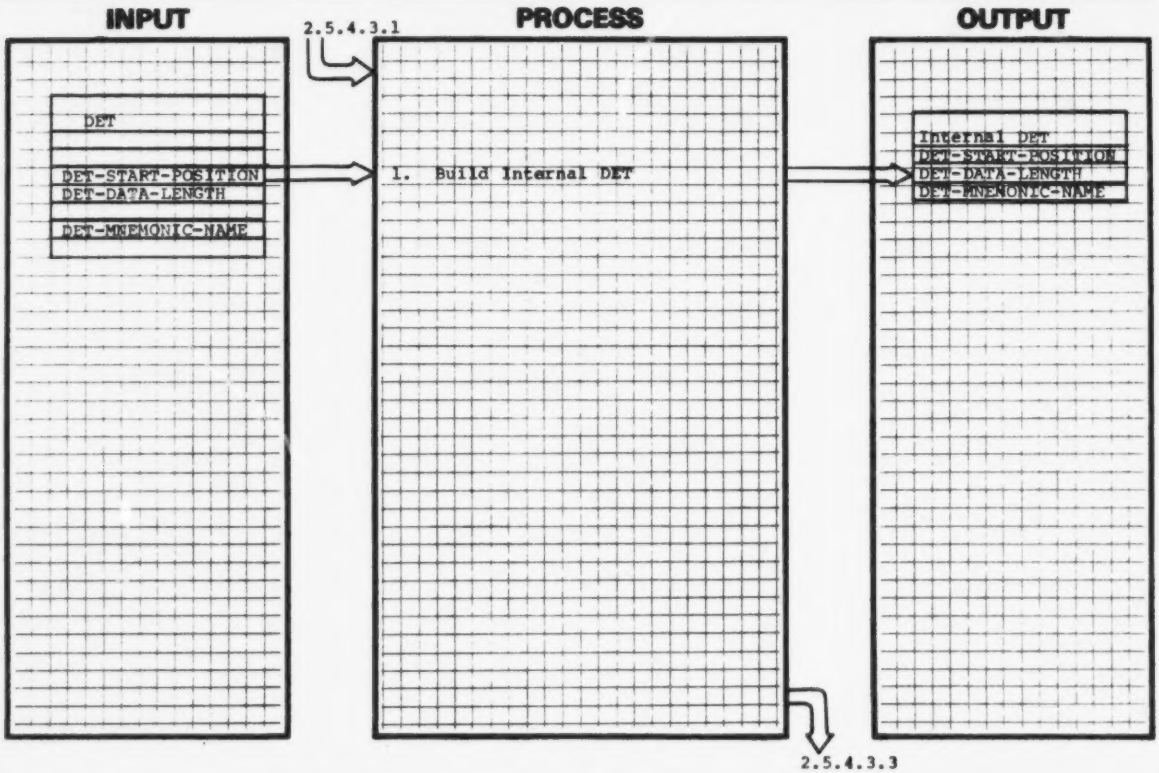


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Operation Report Violations File is written during execution of program WAQC037 and carries information from the 'PROC' record processed by program WAQC025. If, for any reason, WAQC037 terminated abnormally, the field VIFI-H-R-DATE will contain '000000' signifying that this processing is to also terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for 'LOW VALUES'.		WAQC090	213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 **of** 1

Diagram No.: 2.5.4.3.2 **Description:** Build Internal DET

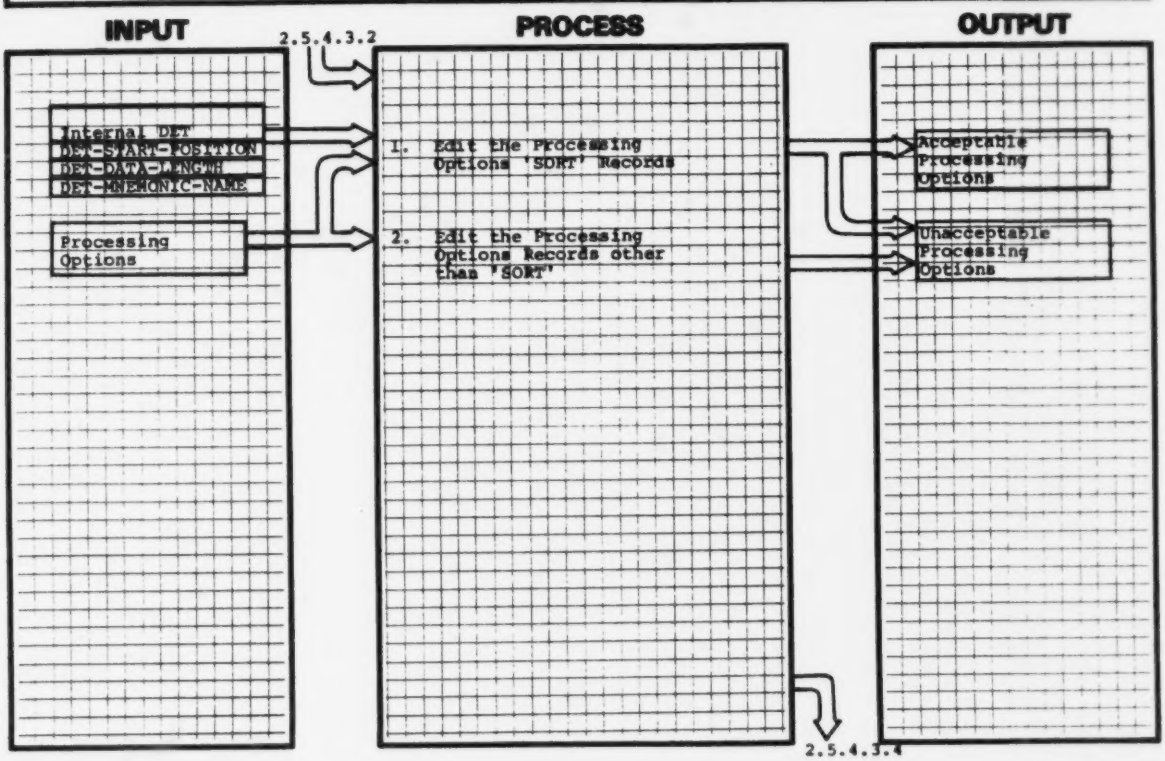


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of VI. Only the file start position, data element length, and data element mnemonic are used.		WAQC090	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 2-11-77 Page: 1 of 1

Diagram No.: 2.5.4.3.3 Description: Edit Processing Options

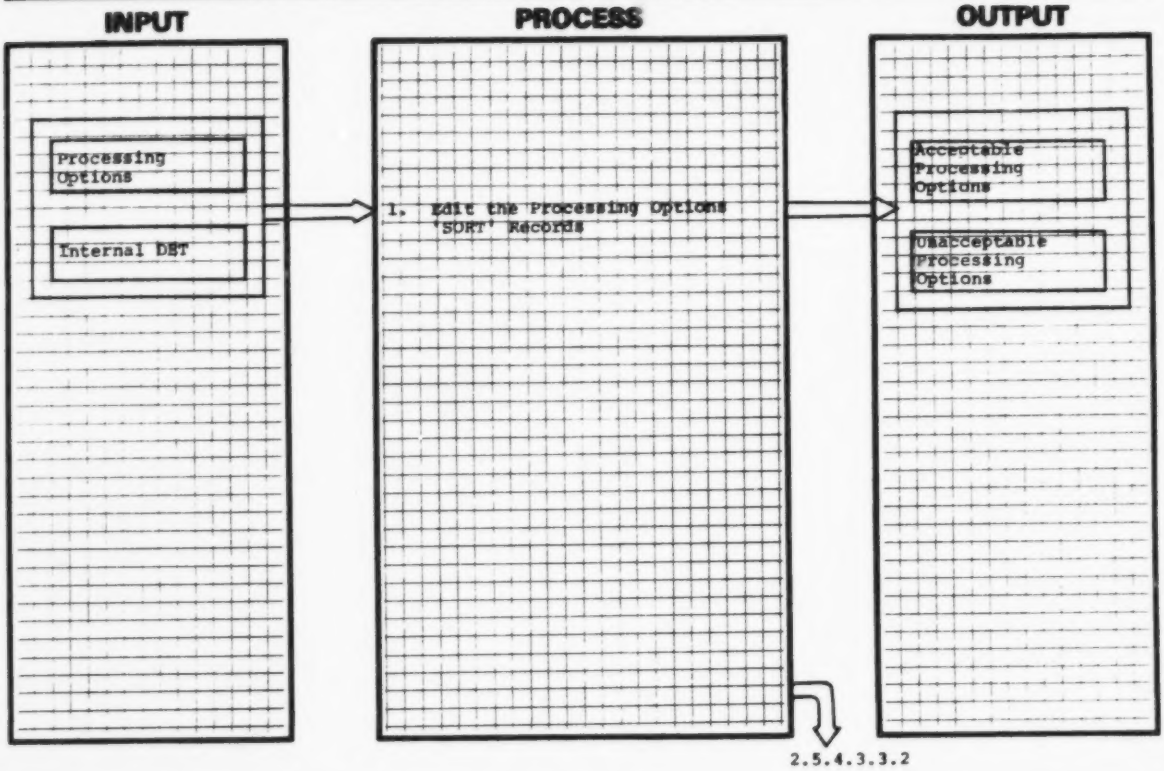


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) with 'SORT' in positions 1-4.	2.5.4.3.3.1	WAQC090	
2	Edit all other Processing Options records. All of these records are in error and processing should terminate.	2.5.4.3.3.2	WAQC090	
	NOTE: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 of 1

Diagram No.: 2.5.4.3.3.1 **Description:** Edit the Processing Options 'SORT' Records

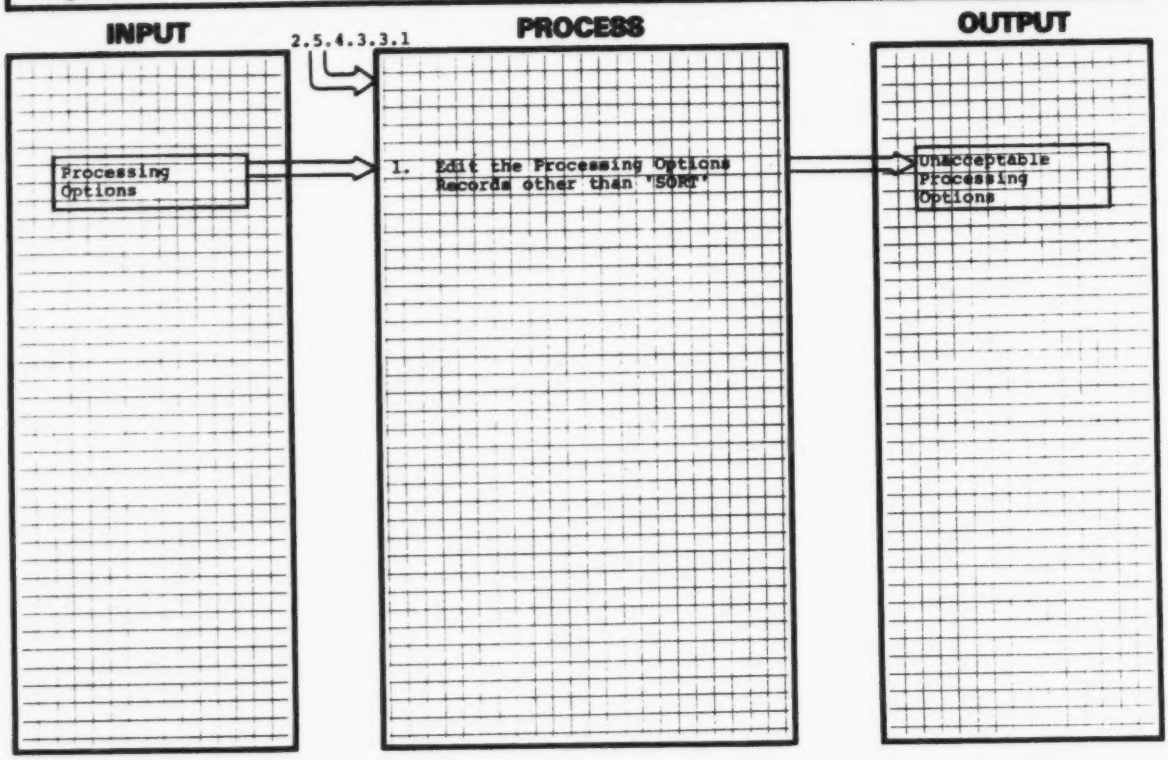


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC090	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 **of** 1

Diagram No.: 2.5.4.3.3.2 **Description:** Edit the Processing Options other than 'SORT'

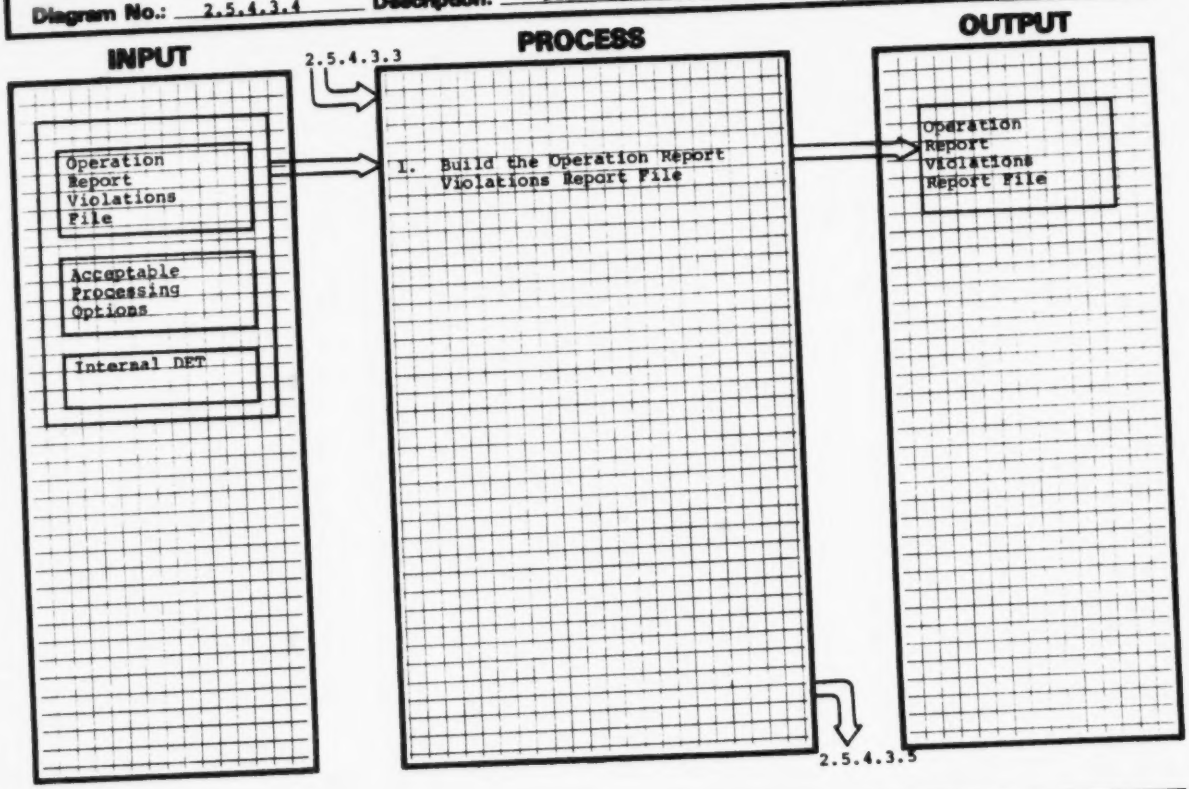


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing will be terminated.		WAQC090	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 of 3

Diagram No.: 2.5.4.3.4 **Description:** Build Operation Report Violations Report File



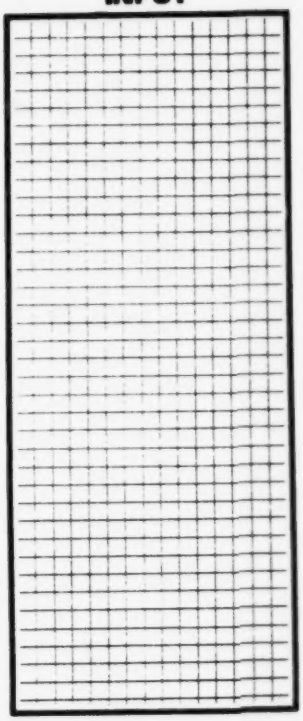
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Operation Report Violations File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Operation Report Violations File record as an array of one character values. b. Match the VIFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Operation Report Violations File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Operation Report Violations File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		WAQC090	213 232 MSIS. 201

MODEL STATE INFORMATION SYSTEM

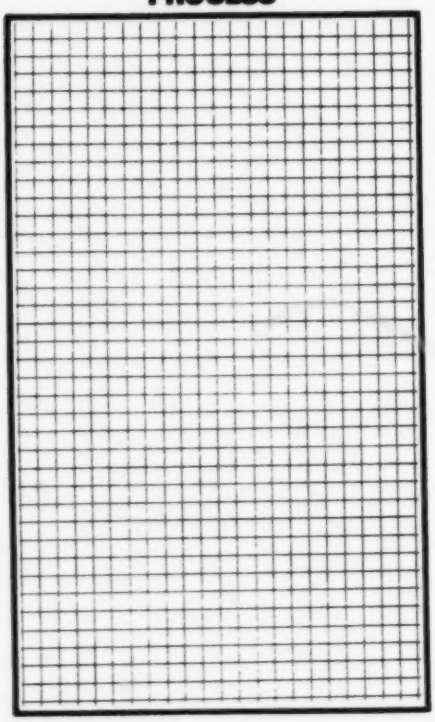
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2-11-77 Page: 2 of 3

Diagram No.: 2.5.4.3.4 Description: Build Operation Report Violations Report File

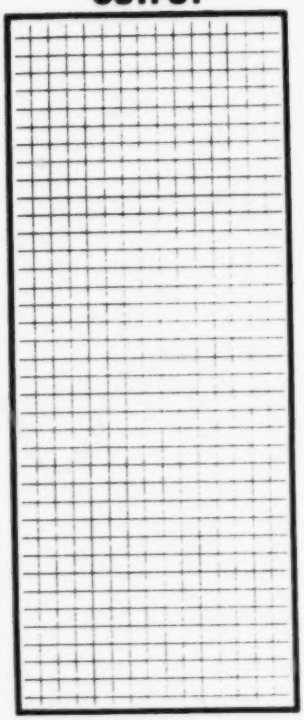
INPUT



PROCESS



OUTPUT



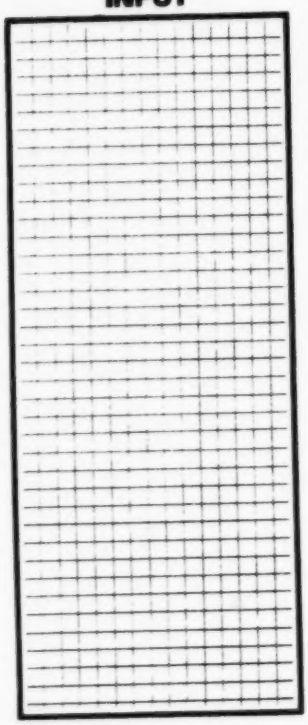
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows:			
	(a) If the VIFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key.		WAQC090	
	(b) If the VIFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key.			
	If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed.			
	(3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key.			
	d. If the VIFI-SORT-MODE = "A" (ascending) move the value obtained in c. to the proper location in the sort key. If the VIFI-SORT-MODE = "D" (descending) redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the VIFI-SORT-SEQUENCE.			

MODEL STATE INFORMATION SYSTEM

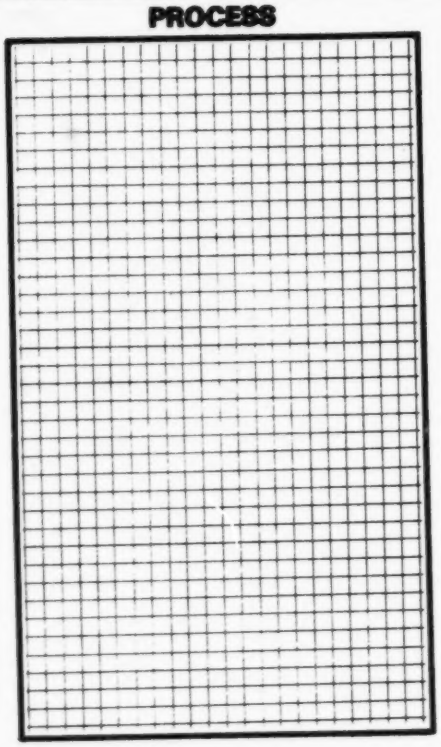
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2-11-77 Page: 3 of 3

Diagram No.: 2.5.4.3.4 Description: Build Operation Report Violations Report File

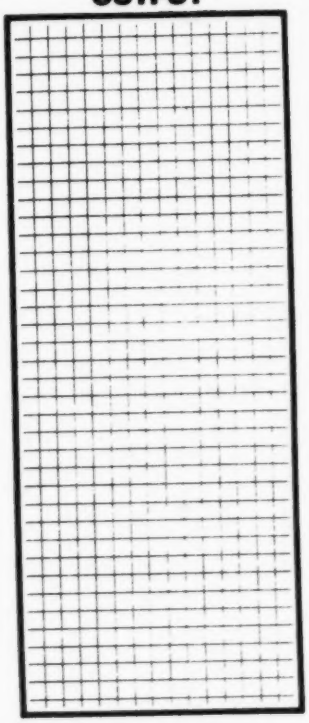
INPUT



PROCESS



OUTPUT

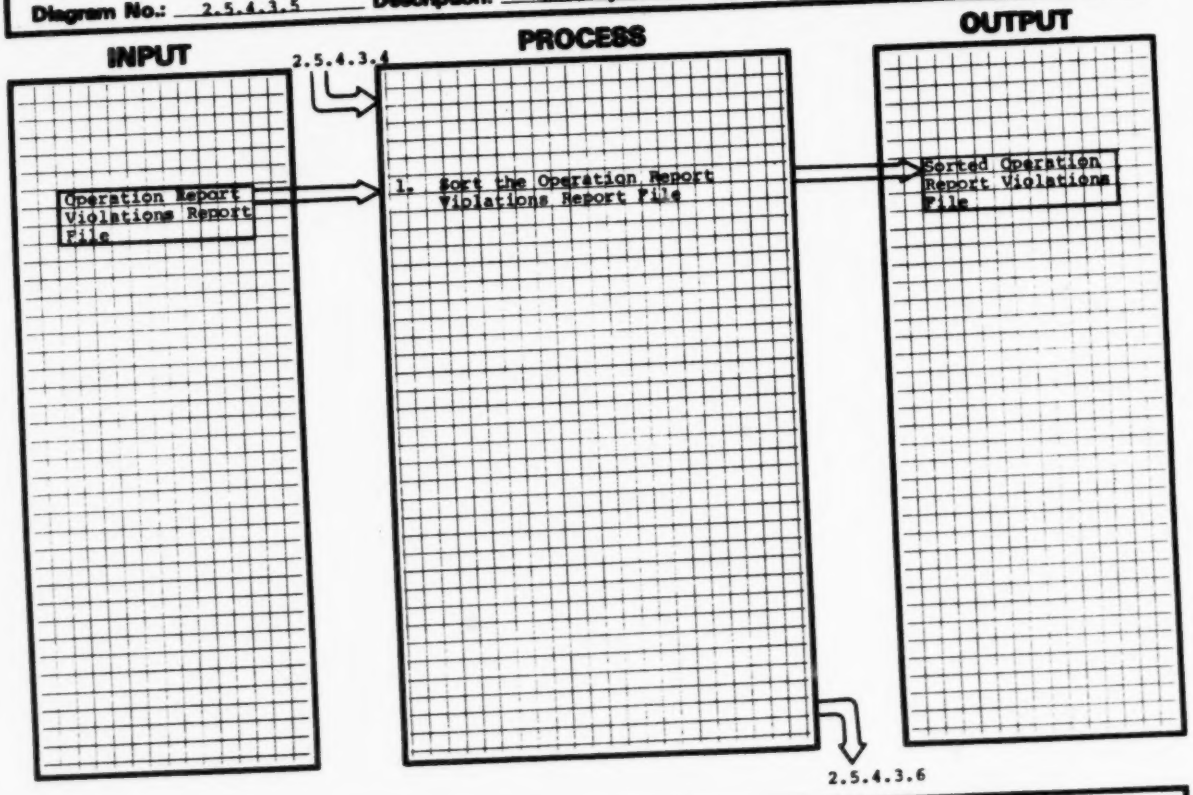


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions The first record of the Operation Report Violations File is a header record containing information to be used in the Report header and is not to be used when building a sort key or in the sort. A Standard Sort Sequence Report will be produced. (See HIPO 2.5.4.3.6)			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 of 1

Diagram No.: 2.5.4.3.5 **Description:** Sort Operation Report Violations Report File

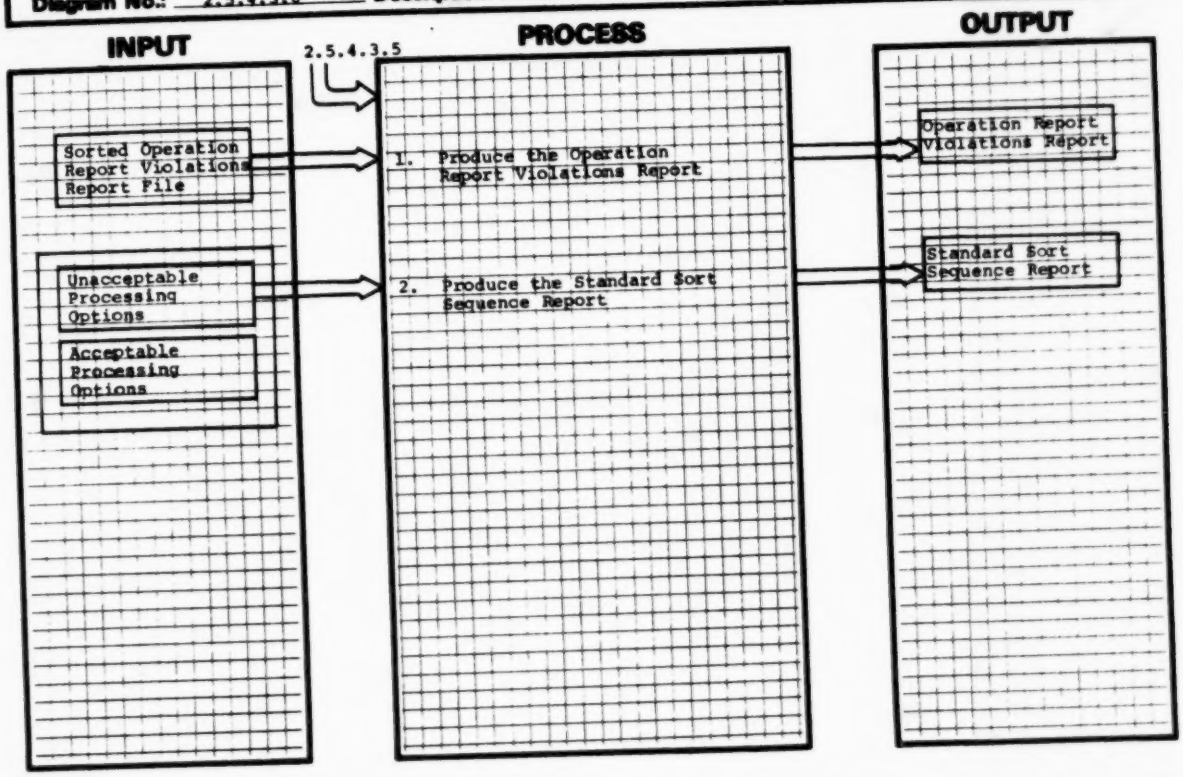


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Operation Report Violations Report File in ascending sequence according to the thirty position sort key.		WAQC090	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-11-77 **Page:** 1 of 1

Diagram No.: 2.5.4.3.6 **Description:** Produce Reports



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Operation Report Violations Report from data on the Sorted Operation Report Violations Report File. Eight violation records will be printed per page. The dates needed for the header will be the from and until dates and the report date saved from the header record on the Operation Report Violations File. Convert all Julian dates, (YYDDD), to calendar dates, (MMDDYY), before printing.		WAQC090	325
2	Produce the Standard Sort Sequence Report which will contain either the Sort Sequence Report or Processing Options record images and associated error messages if Processing Options were detected.		WAQC090	MSIS. 309 MSIS. 311

Water Quality Compliance Subsystem 2
Produce Analysis Data Reports .6
Select From SAF .1
Build Internal DET .1
Edit Processing Options .2
Build Internal CVT .3
Select SAF Records .4
Build Selected SAF Report Records .5
Produce Standard Selection Statistics Report .6
Produce Summary Reports .2
Produce Summary of Chemical Analysis Report .1
Produce Summary of Radiological Analysis Report .2
Produce Summary of Bacteriological Analysis Report .3
Produce Summary of Turbidity Analysis Report .4
LEGEND
Data Flow
Entries & Exits
Multiple I/O Reference

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Produce Summary of Radiological Analysis Report 2.6.2.2
Produce Summary of Bacteriological Analysis Report 2.6.2.3
2.6.2.4 Produce Summary of Turbidity Analysis Report

Diagram Type: VTOC

Diagram No. 2.6

Subsystem: Water Quality Compliance

Description: Produce Analysis Data Reports

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC100
DATE: 2/4/77

I. OBJECTIVES:

The objective of this program is to search the Sample Analysis File (SAF) and select specific SAF records for the Summary of Chemical Analysis Report, the Summary of Radiological Analysis Report, the Summary of Bacteriological Analysis Report, and the Summary of Turbidity Analysis Report based upon given selection criteria.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Sample Analysis File	SAF-RECORD	WAQC.254
2.	Code Value Table	CVT-RECORD	MSIS.206
3.	Data Element Table	DET-RECORD	MSIS.201
4.	Public Water Table	PWT-RECORD PWT-HEADER-RECORD	PWSI.201 PWSI.234

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	SAFI-PROC-SELECT-RECORD	WAQC.115	WAQC.233
2.	Selection Form (SEL1)	SAFI-SELECT-1-RECORD	WAQC.116	WAQC.240
3.	Selection Form (SEL2)	SAFI-SELECT-2-RECORD	WAQC.117	WAQC.241

C. Turnaround Documents:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Chemical/Radiological Analysis Select File	SAFI-HEDR-REPT-RECORD SAFI-D-REPT-RECORD	WAQC.228 WAQC.234
2.	Chemical/Radiological Analysis Select File	SAFI-HEDR-REPT-RECORD SAFI-D-REPT-RECORD	WAQC.228 WAQC.234
3.	Bacteriological/ Turbidity Analysis Select File	SAFI-HEDR-REPT-RECORD SAFI-S-REPT-RECORD	WAQC.228 WAQC.235
4.	Bacteriological/ Turbidity Analysis Select File	SAFI-HEDR-REPT-RECORD SAFI-S-REPT-RECORD	WAQC.228 WAQC.235

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Selection Statistics Report	MSIS.312 MSIS.309

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Build the internal Data Element Table (DET) from the DET. The internal DET is used to edit the 'SEL1' Processing Options Records and to select records from the Sample Analysis File (SAF).

2. Edit the processing options records for errors. The 'PROC' record is edited for valid dates and contaminant group codes. The 'SEL1' and 'SEL2' records are edited for acceptable values. If any errors exist, processing will terminate, error messages will be written to the Standard Selection Statistics Report, and each of the four header records will contain '000000' for the current date.

3. Build an internal Code Value Table (CVT) from the CVT to be used for extracting information for the four report files.

4. Select the Sample Analysis File (SAF) records based on the criteria established in the Processing Options records.

5. Build Selected SAF report records from the records selected in Step 4 and data from the Public Water Table (PWT) and the internal Code Value Table (CVT).

6. Produce a Standard Selection Statistics Report showing the selection criteria and the number of records that were selected or Processing Options error messages.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

2. Selection Form 1 (Definition of Data Element)

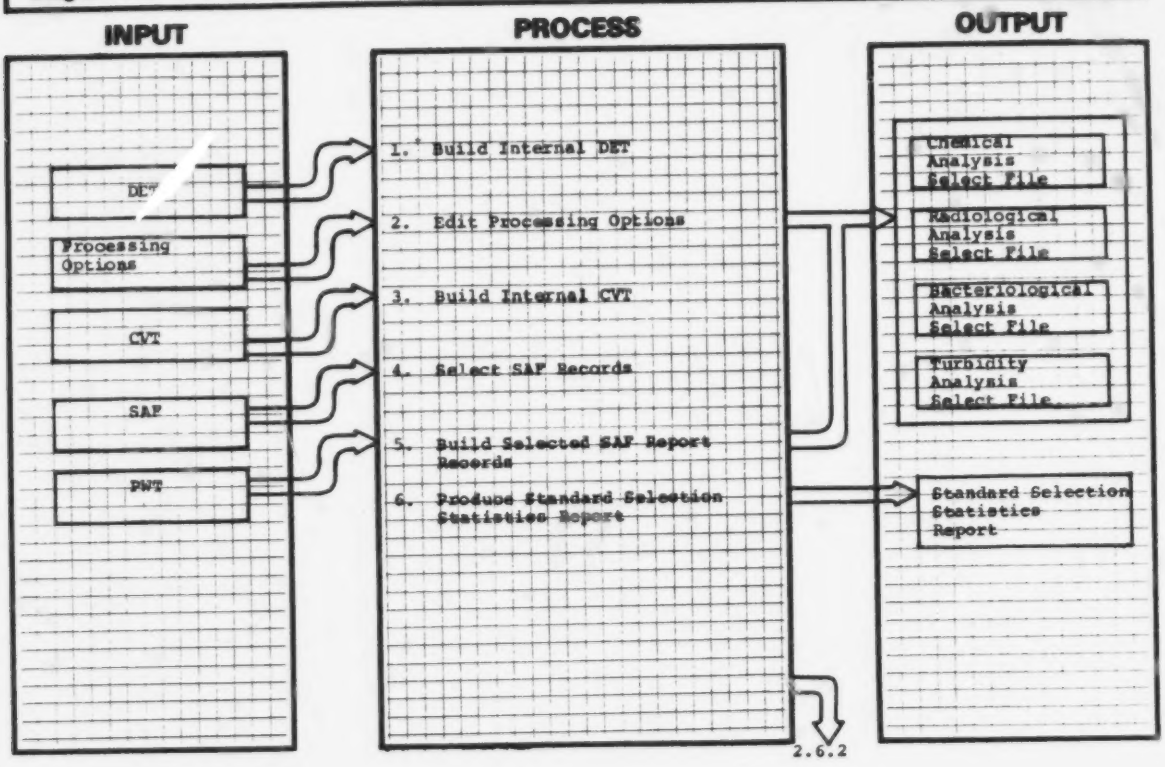
3. Selection Form 2 (Definition of Logic for Selection)

B. Data Element Descriptions:

1. Sample Analysis File (SAF)

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 of 1
Diagram No.: 2.6.1 **Description:** Select from SAF

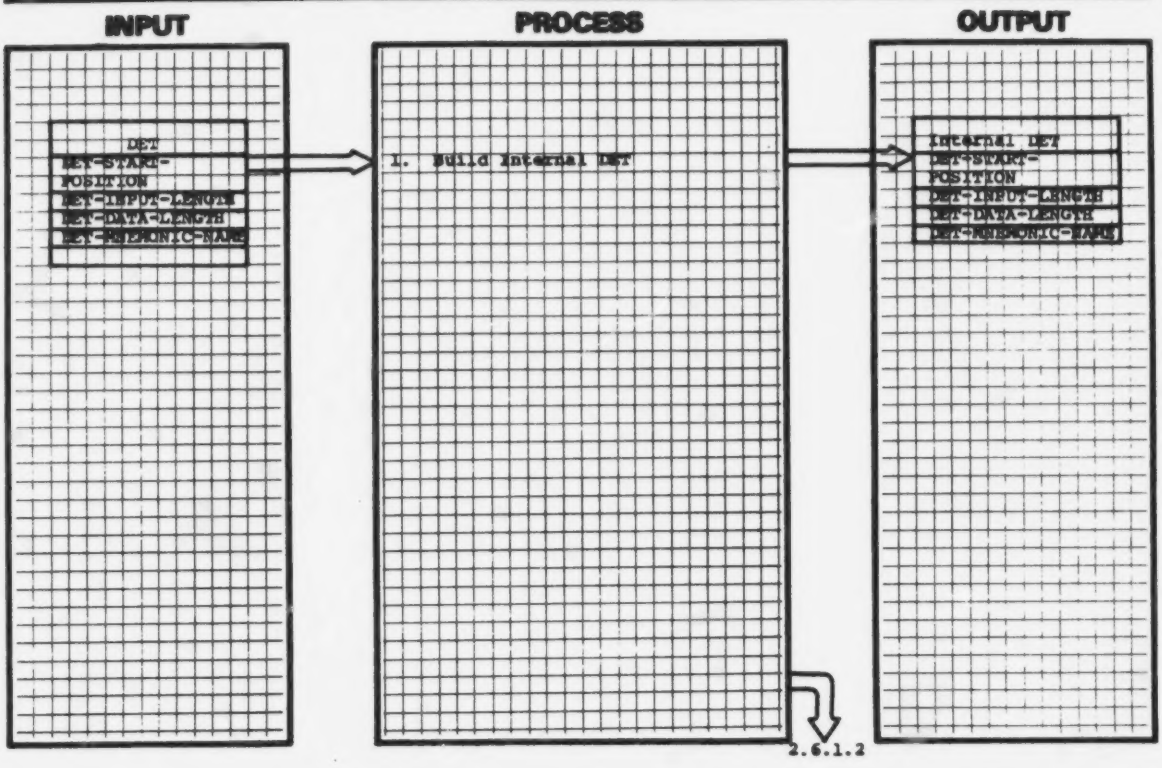


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Data Element Table (DET) from the DET.	2.6.1.1	WAQC100	
2	Edit the 'PROC', 'SEL1', and 'SEL2' Processing Options and build the header record for each Analysis Select File. If any errors occurred in any of the Processing Options, move '000000' to the SAFI-H-R-DATE field on each of the output header records and terminate processing.	2.6.1.2	WAQC100	
3	Build an Internal Code Value Table (CVT) from the CVT by selecting the appropriate records and storing them internally.	2.6.1.3	WAQC100	
4	Select records from the Sample Analysis File (SAF) using the criteria established in the Processing Options records edited in Step 2.	2.6.1.4	WAQC100	
5	Build the Chemical Analysis Select File, the Radiological Analysis Select File, the Bacteriological Analysis Select File, and the Turbidity Analysis Select File by including information from the Public Water Table (PWT) and the internal Code Value Table (CVT) into the selected records.	2.6.1.5	WAQC100	
6	Produce the Standard Selection Statistics Report containing all selection criteria and the number of records that were selected.	2.6.1.6	WAQC100	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/4/77 Page: 1 of 1

Diagram No.: 2.6.1.1 Description: Build Internal DET

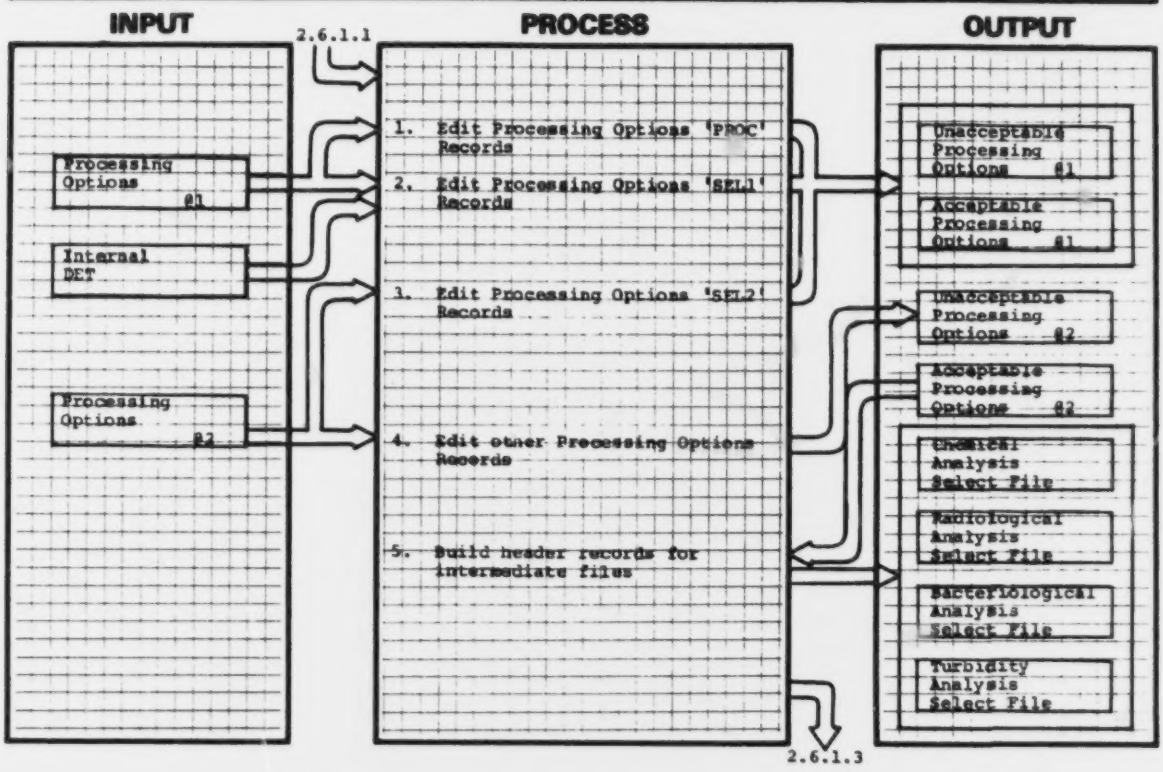


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of 'SA'. Only the file start position, data element length, data input length, and data element mnemonic are used.		WAQC100	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 **of** 1

Diagram No.: 2.6.1.2 **Description:** Edit Processing Options

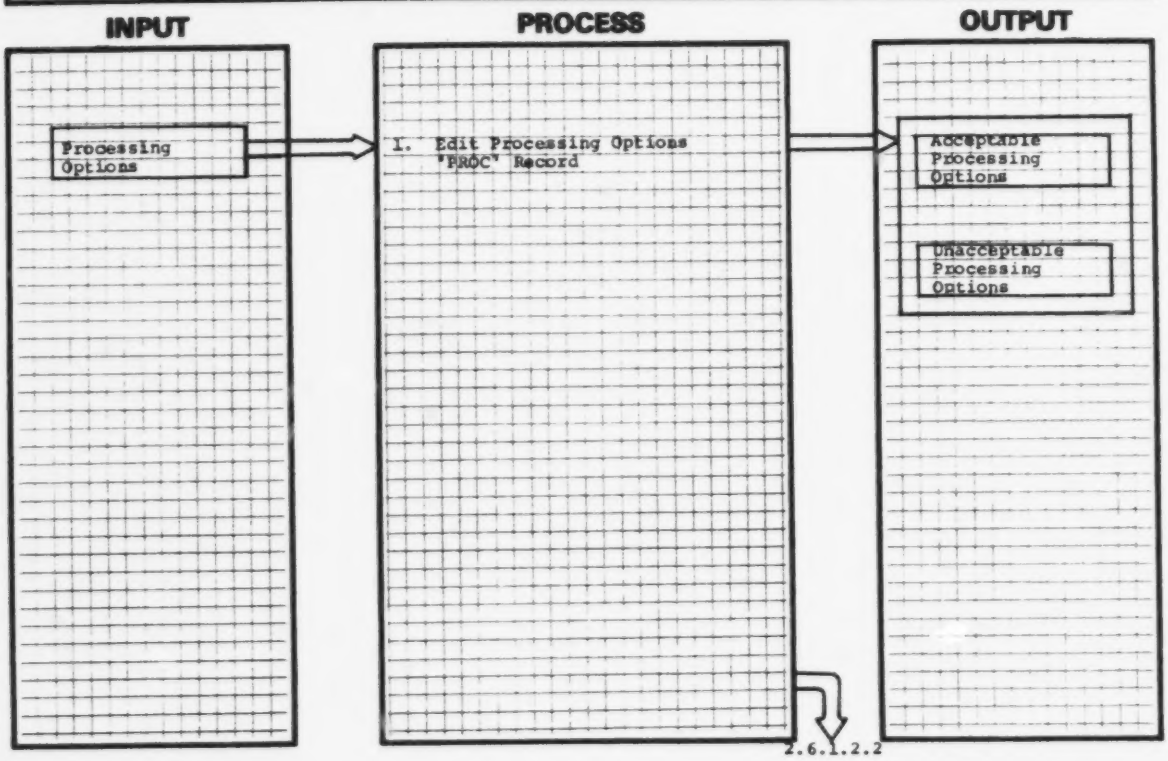


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records which have 'PROC' in the first four (4) positions of the record.	2.6.1.2.1	WAQC100	
2	Edit the Processing Options records which have 'SEL1' in the first four (4) positions of the record.	2.6.1.2.2	WAQC100	
3	Edit the Processing Options records which have 'SEL2' in the first four (4) positions of the record.	2.6.1.2.3	WAQC100	
4	Edit Processing Options records other than 'PROC', 'SEL1', or 'SEL2'. If found, they are in error.	2.6.1.2.4	WAQC100	
5	Build header records for intermediate files to be used in report programs WAQC110, WAQC111, WAQC112 and WAQC113. The header record will include the selection period 'to' and 'from' dates. Note: If any of the Processing Options records are in error, move '000000' to SAFI-H-R-DATE in each intermediate file, then terminate processing after writing the record and an associated error message on the Standard Selection Statistics Report (see HIPO 2.6.1.6).	2.6.1.2.5	WAQC100	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 **of** 1

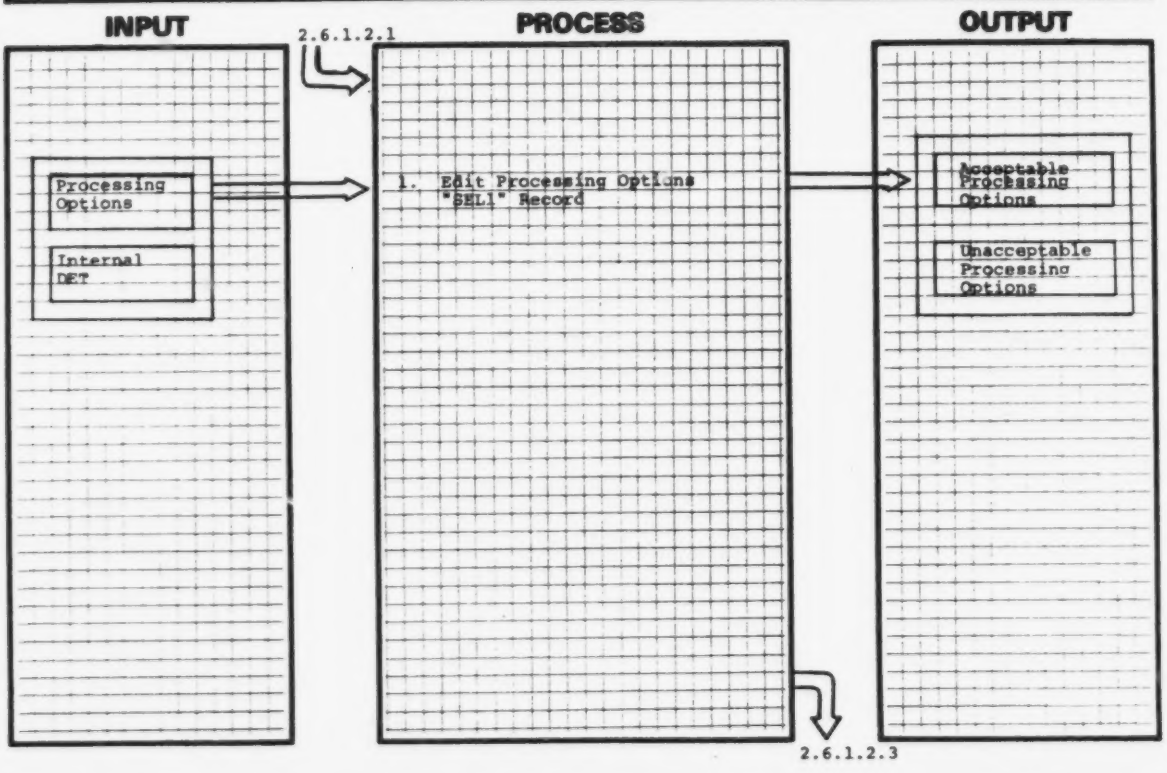
Diagram No.: 2.6.1.2.1 **Description:** Edit Processing Options 'PROC' Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'PROC' in positions 1-4 of the record as follows: a. Current date must be a valid date. b. The 'FROM' date must be a valid date. c. The 'TO' date must be a valid date greater than or equal to the 'FROM' date. d. Contaminant Group Check fields should be either a 'Y' or 'N'. If any other character or blank is detected, default to 'N' for that contaminant group. If all contaminant group fields are 'N' or have defaulted to 'N', write a message on the Standard Selection Statistics Report (see HIPO 2.6.1.6). Also move '000000' to the header record on the intermediate files, then terminate processing. e. The Summary or List option fields (positions 31 and 32) must be an 'S' or 'L' if positions 27, 28 (chemical), or 30 (radiological) contain a 'Y' respectively. If any other character or blank is detected, default to 'L' and write a message on the Standard Selection Statistics Report (see HIPO 2.6.1.6). *Note:* *'FROM' and 'TO' dates are converted to Julian mode before they are edited. Save the calendar dates from the Processing Options record to be moved to the header records of Analysis Select Files (see HIPO 2.6.1.2.5).*		WAQC100	117 233

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 **of** 1
Diagram No.: 2.6.1.2.2 **Description:** Edit Processing Options "SEL1" Record

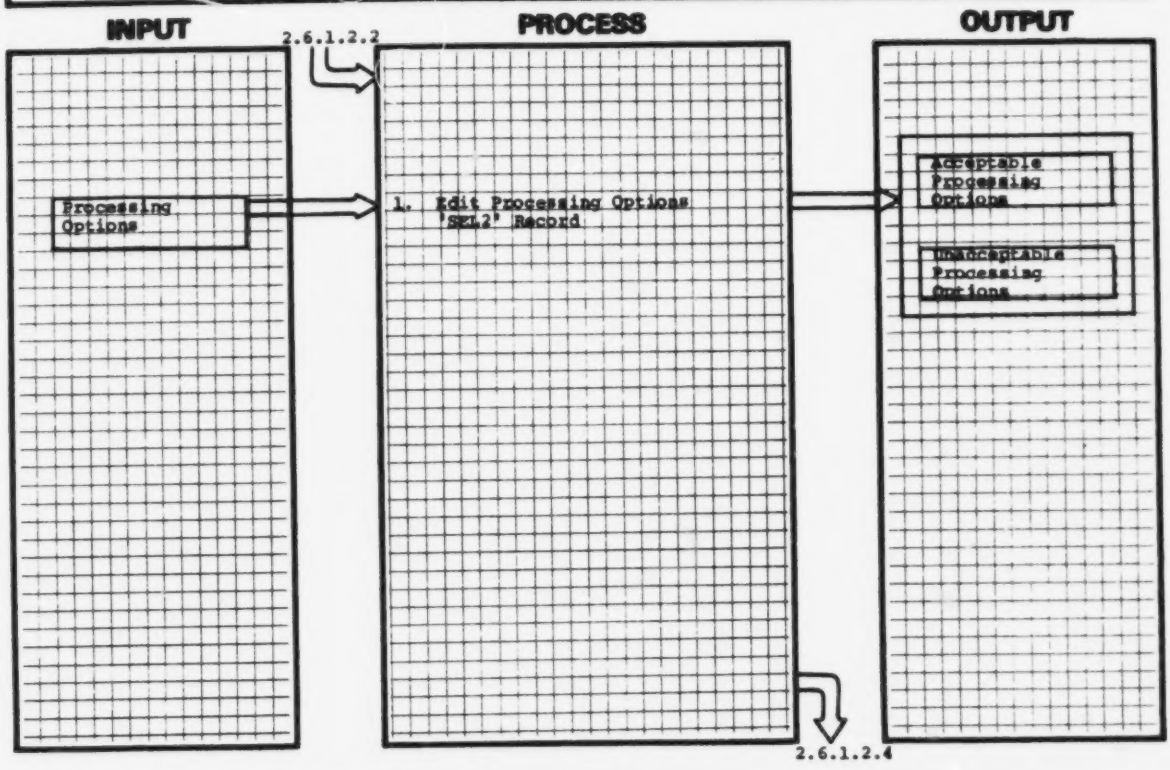


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Options records with "SEL1" in positions 1-4 of the records as follows: a. SAFI-SELECT-1-MNEMONIC, positions 5-14, must equal one of the mnemonic names on the record layout for the Sample Analysis File (SAF). This edit is hard coded into the program. b. SAFI-SELECT-1-DE-VALUE, positions 15-29, must have blanks in positions (DE-INP-LNG plus 15) to 29 where DE-LENGTH is the length of a data element associated with the mnemonic name matched in 1.a. above. Positions 15 to (DE-INP-LNG plus 14) must be either numeric or alphanumeric as specified by the Data Element Dictionary (DED) for that particular data element. Additionally, if the data element is a date, it is checked for validity and then converted to Julian for comparison purposes. If the SAFI-SELECT-1-DE-VALUE is numeric, contains a decimal point, and the associated SAFI-SELECT-1-MNEMONIC references a decimal number (refer to the DED for these elements), then move the SAFI-SELECT-1-DE-VALUE to a 15 position alphanumeric field for comparison purposes, placing the decimal in position 6 and replacing all blanks with zeros. c. SAFI-SELECT1-DE-NO, positions 30-31, must be a number from 01 to 35 and must be a different number from all other "SEL1" records. If there are no "SEL1" records or if an error exists on any "SEL1" record, then the record is in error and will be written on the Standard Selection Statistics Report. Appropriate error messages for the "SEL1" processing options record may be found be referencing the Error Code Instructions. If any errors exist, processing will be terminated.		WAQC100	240 116

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2/4/77 Page: 1 of 1

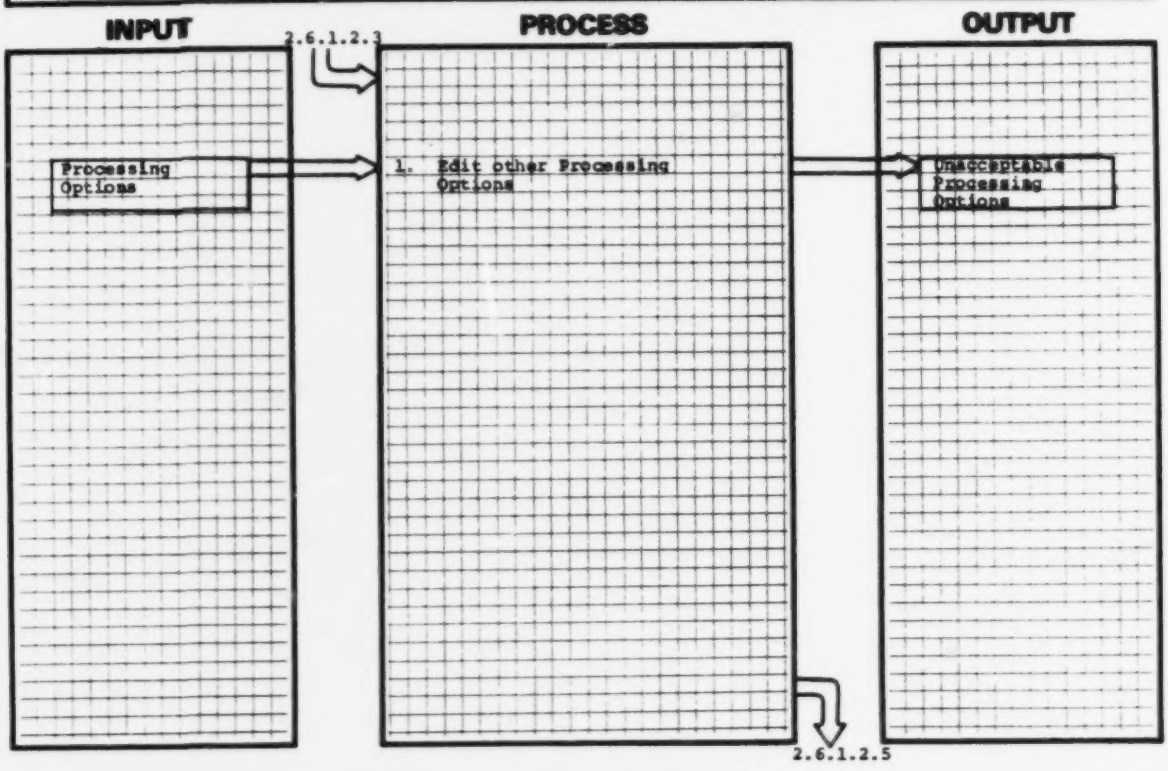
Diagram No.: 2.6.1.2.3 Description: Edit Processing Options 'SEL2' Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL2' in positions 1-4 of the records as follows: a. Each non-blank SAFI-SELECT-2-SYMBOL must have a corresponding 'SEL1' record, determined by SAFI-SELECT-1-DE-NO being equal to the array position of the SAFI-SELECT-2-SYMBOL being edited. In addition, the SAFI-SELECT-2-SYMBOL must equal one of the following operational symbols: LT = less than EQ = equal to GT = greater than NL = not less than NG = not greater than NX = does not exist, blank Note: If there are more than 35 'SEL2' records, if no 'SEL2' record exists, or if an error exists on a 'SEL2' record, then the record is in error and will be written on the Standard Selection Statistics Report. If any errors exist, processing will be terminated.		WAQC100	117 240 241

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 of 1
Diagram No.: 2.6.1.2.4 **Description:** Edit Other Processing Options Records

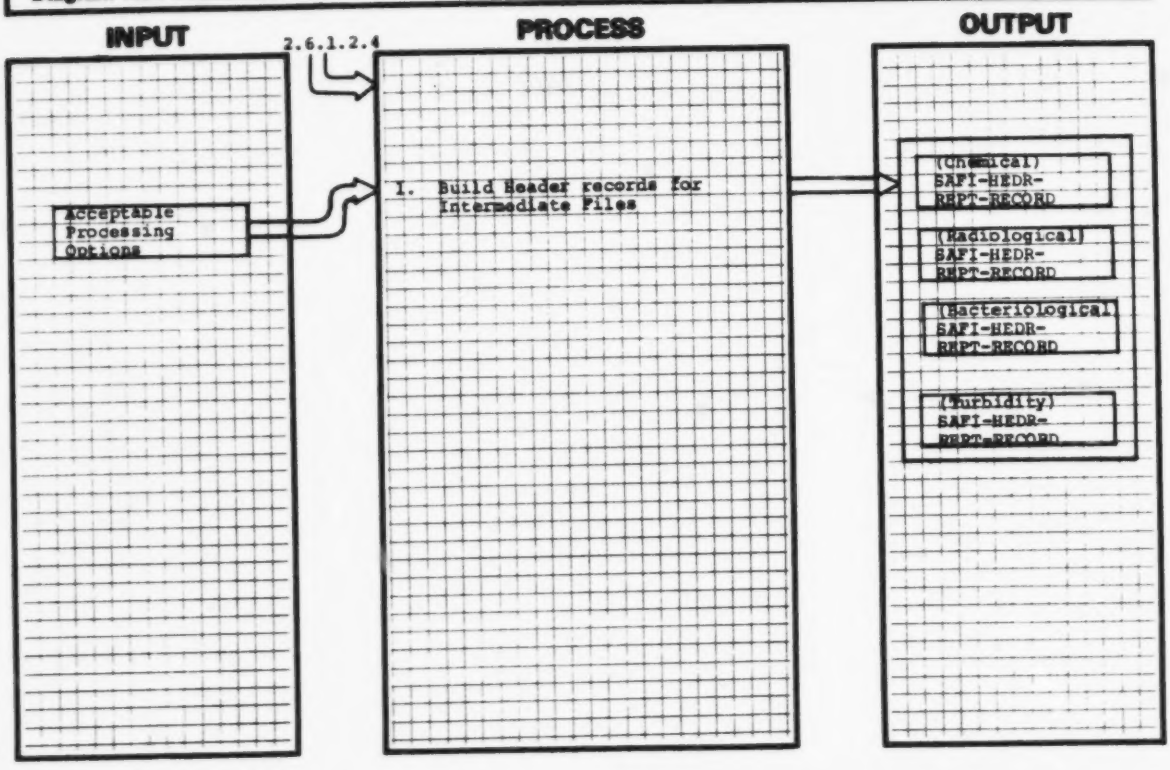


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'PROC', 'SEL1', or 'SEL2' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT PROC, SEL1, or SEL2' is moved to the error message area. Also, move '000000' to SAFI-H-R-DATE, then terminate processing. Note: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Selection Statistics Report.		WAQC100	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 of 2

Diagram No.: 2.6.1.2.5 **Description:** Build Header Records for Intermediate Files

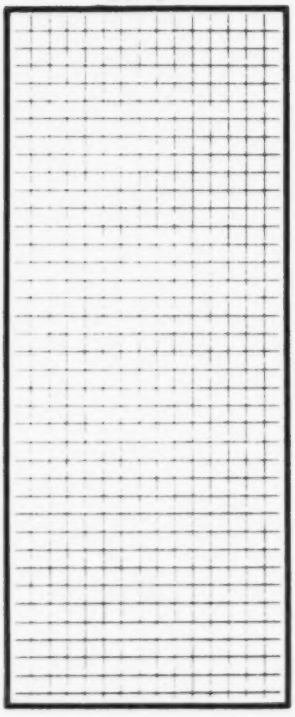


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the header record on each intermediate file as follows: a. SAFI-H-R-ID is set to 'LOW VALUES' for each of the four records. b. SAFI-H-R-DATE is set to the date on the 'PROC' record if no errors occurred during the editing of the Processing Options records. If an error occurred during editing of the Processing Options record, move '000000' to SAFI-H-R-DATE on the intermediate file, then terminate processing. If there are processing errors, steps c through h are not to be done. c. SAFI-H-R-FROM-DATE is set to the date on the 'PROC' record if no errors occurred during editing of the Processing Options records; if an error occurred during editing of the Processing Options records, move blanks to SAFI-H-R-DATE on the intermediate files, then terminate processing. d. SAFI-H-R-UNTIL-DATE is set to the date on the 'PROC' record, if no errors occurred during editing of the Processing Options records. If an error occurred during editing of the Processing Options records, move blanks to SAFI-H-D-DATE on the intermediate files, then terminate processing. The Contaminant Group Check is treated as follows: e. If the Turbidity Contaminant Check (position 26) is set to 'N', move '000000' to SAFI-H-R-DATE on the Turbidity Analysis Select File header record. If Turbidity Contaminant Check is set to 'Y', move current date from the 'PROC' Processing Options to SAFI-H-R-DATE on the Turbidity Select Analysis File header record.		WAQC100	228

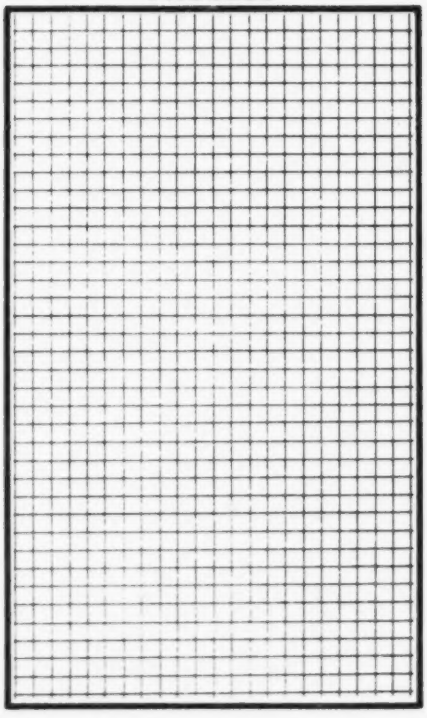
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 2 **of** 2
Diagram No.: 2.6.1.2.5 **Description:** Build Header Record for Intermediate Files

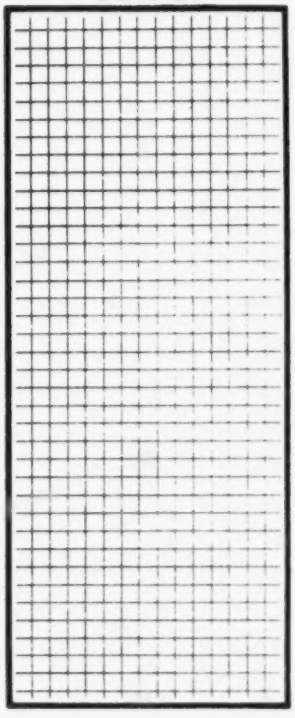
INPUT



PROCESS



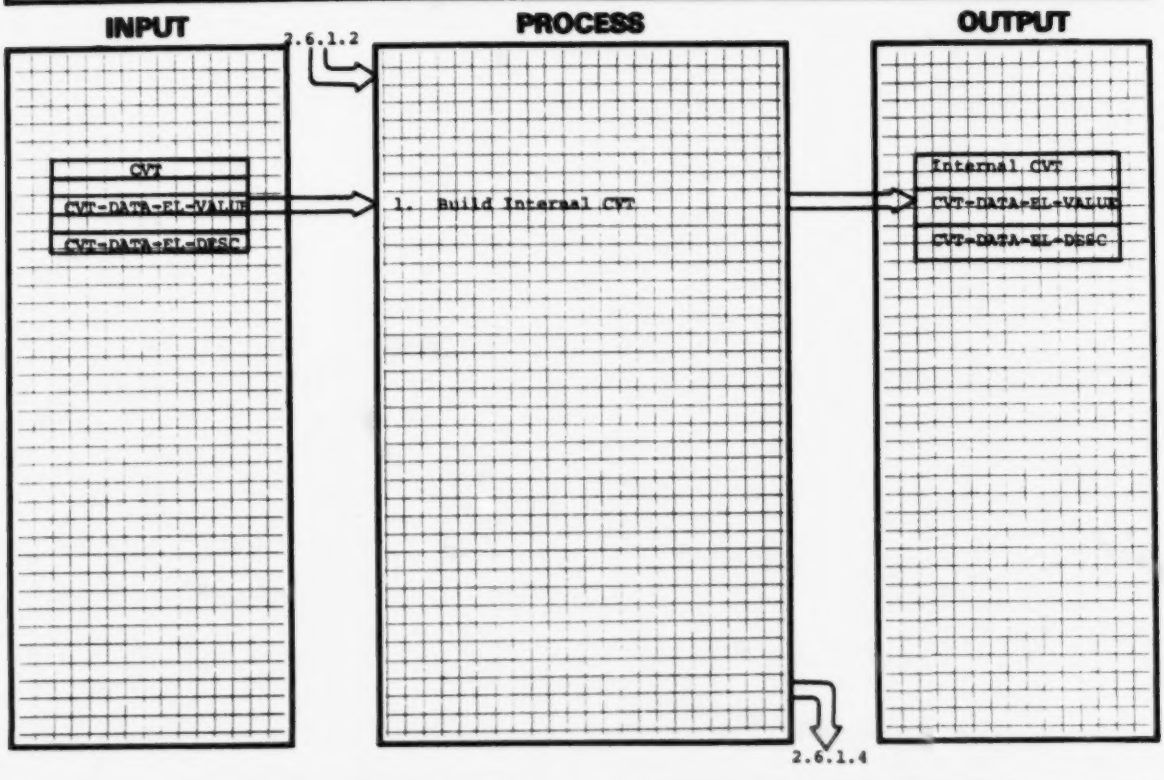
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	f. If both the Inorganic Chemical Contaminant Check (position 27) and the Organic Chemical Contaminant Check (position 28) are set to 'N', move '000000' to SAFI-H-R-DATE on the Chemical Analysis Select File header record. If either is set to 'Y', move the current date from the 'PROC' Processing Options to SAFI-H-R-DATE on the Chemical Analysis Select File header record. g. If the Bacteriological Contaminant Check (position 29) is set to 'N', move '000000' to SAFI-H-R-DATE on the Bacteriological Analysis Select File header record. If the Bacteriological Contaminant Check is set to 'Y', move the current date from the 'PROC' Processing Options to SAFI-H-R-DATE on the Bacteriological Analysis Select File header record. h. If the Radiological Contaminant Check (position 30) is set to 'N', move '000000' to SAFI-H-R-DATE on the Radiological Analysis Select File header record. If the Radiological Contaminant Check is set to 'Y', move the current date from the 'PROC' Processing Options to SAFI-H-R-DATE on the Radiological Analysis Select File header record. i. Move the field in position 31 of the 'PROC' Processing Options record to SAFI-H-R-SUMMARY-LIST (position 25) of the Chemical Analysis Select File header record. Move the field in position 32 of the 'PROC' Processing Options record to SAFI-H-R-SUMMARY-LIST (position 25) of the Radiological Analysis Select File header record.			

MODEL STATE INFORMATION SYSTEM

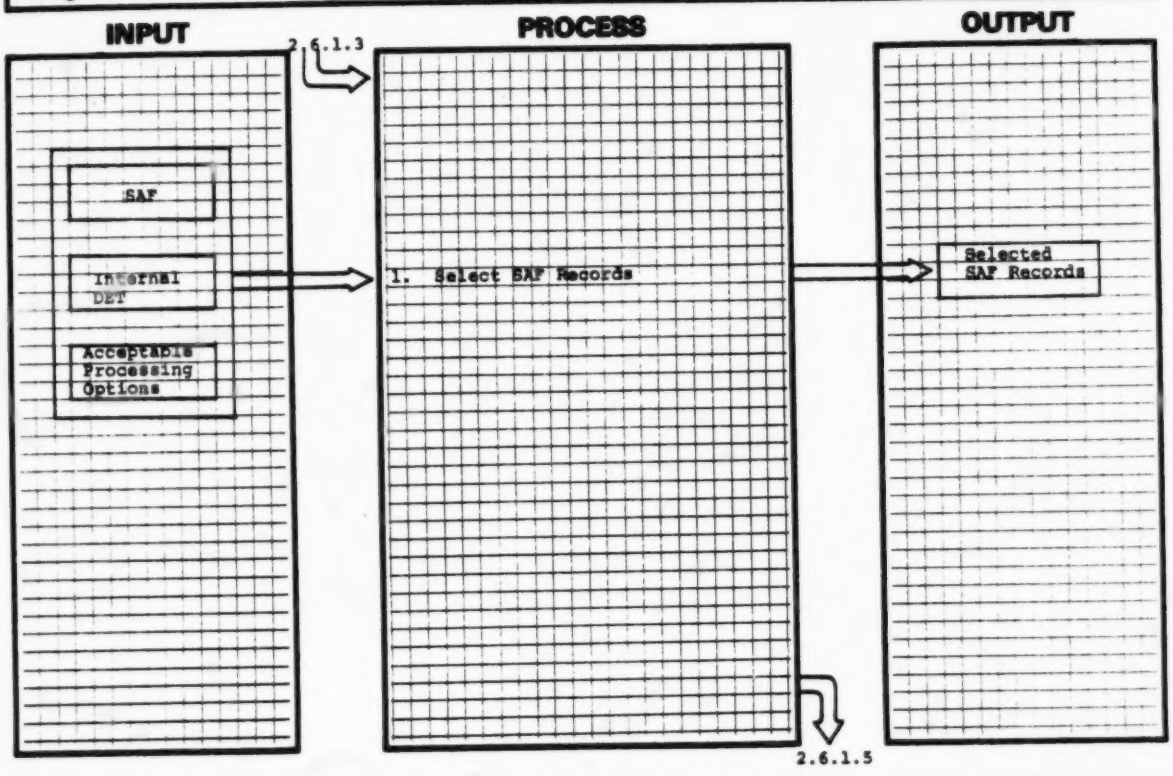
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 **of** 1
Diagram No.: 2.6.1.3 **Description:** Build Internal CVT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of Contaminant ID and the appropriate contaminant names. The 'MS' external CVT file will be searched and the appropriate records stored on the internal CVT.			MSIS. 206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 **of** 2
Diagram No.: 2.6.1.4 **Description:** Select SAF Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Read a Sample Analysis File (SAF) record. For each mnemonic name, SAFI-SELECT-1-MNEMONIC specified on the 'SEL1' records, obtain the corresponding data element value from the SAF record. If the SAFI-SELECT-1-MNEMONIC references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal Indicator = 4 Fifteen position alphanumeric = 00000.012300000 If the SAFI-SELECT-1-MNEMONIC represents a value with multiple occurrences (maintained in an array), all such values must be obtained. If the SAFI-SELECT-1-MNEMONIC represents a value with a length greater than 15, only obtain the first fifteen positions of the value. Using those values obtained from the SAF record, examine the logic established in each 'SEL2' record to determine if the SAF record should be selected. If the Nth SAF-SELECT-1-DE-VALUE from the 35 position array of a 'SEL2' record in non-blank, then compare the appropriate value from a 'SEL1' record (SAF-SELECT-1-DE-VALUE, where SAF-SELECT-1-DE-NO = N) with the corresponding value (same mnemonic name) obtained from the SAF record. The comparison between these two values is made according to the Nth operational symbol (see HIPO 2.6.1.2.3). If there is no unique corresponding value (values exist in an array), then each value in the array must be compared until one satisfies the conditions of the comparison. If the SAF record meets all the above comparison criteria, then the SAF is selected. Each SAF record is processed using all 'SEL2' records so that the selection counts are properly maintained.		WAQC100	240 241 233 254

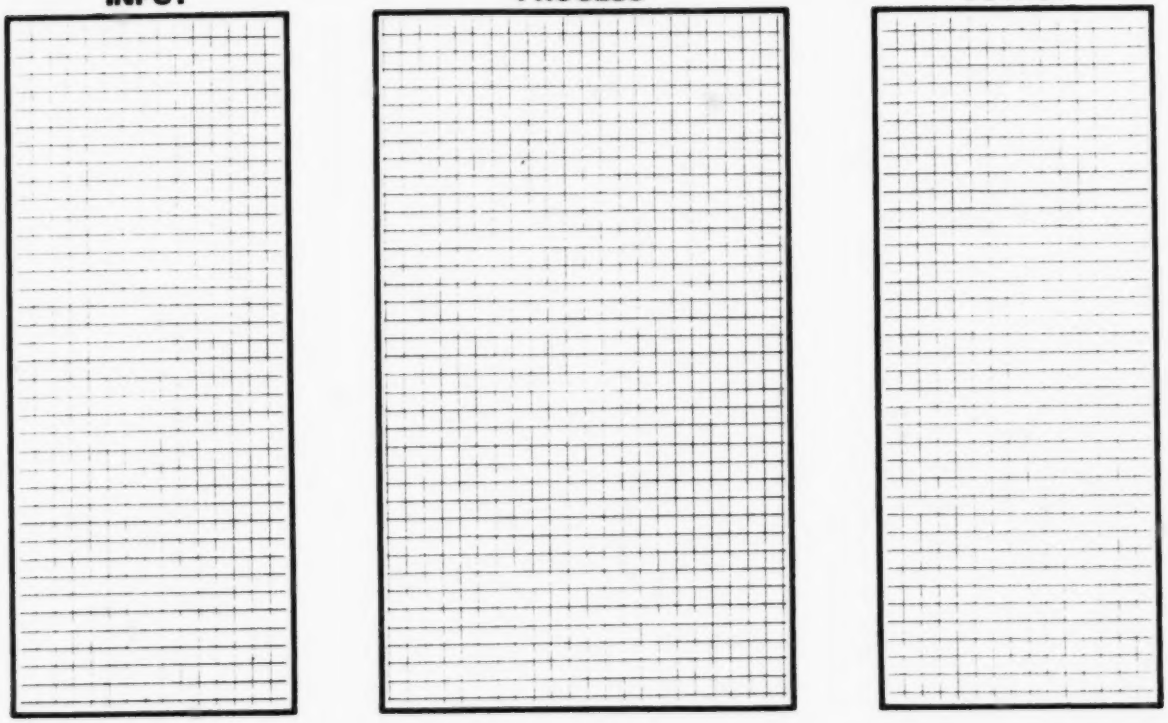
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 2 **of** 2
Diagram No.: 2.6.1.4 **Description:** Select SAF Records

INPUT

PROCESS

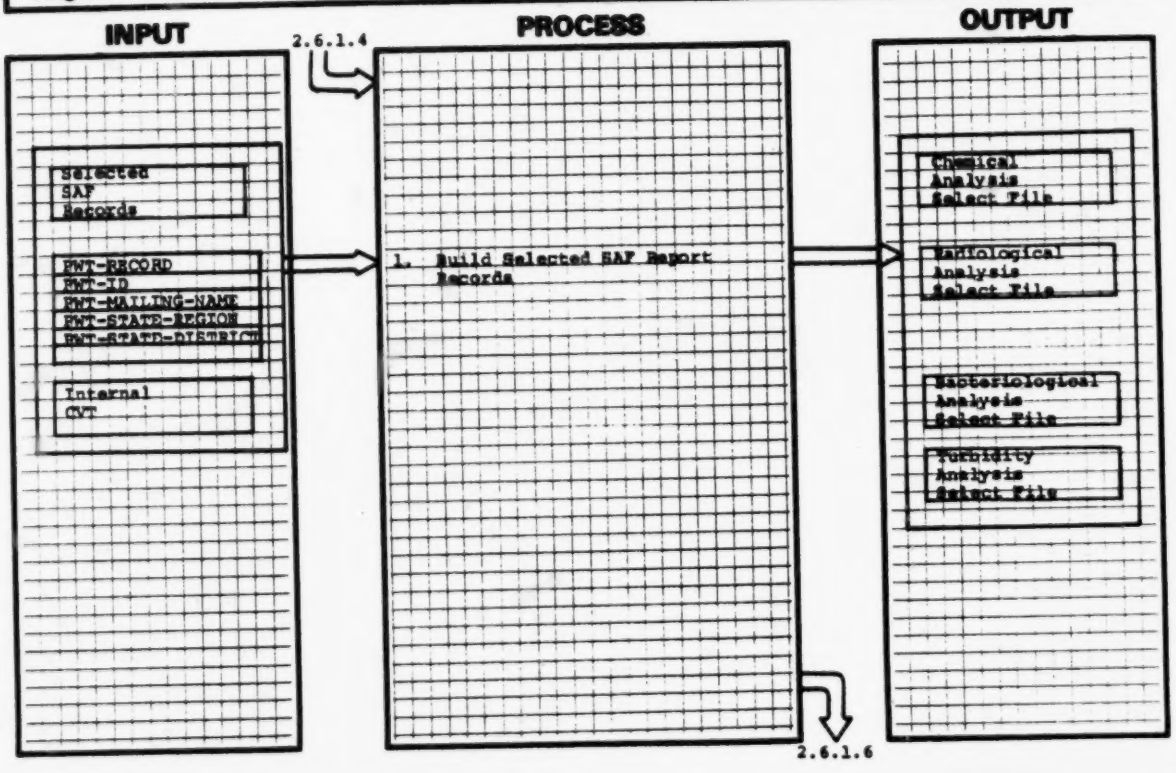
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Note: The 'To' date, 'From' date and Contaminant ID are to be treadted as part of the Selection Criteria for the Sample Analysis File (SAF). The SAF record msut meet the following criteria: a. Have an SAF-SAMPLE-DATE equal to or greater than the 'FROM' date; b. Have an SAF-SAMPLE-DATE equal to or less than the 'TO' date. Unless specified on a 'SEL1' or 'SEL2' Processing Options records, selection for sample type will occur only for SAF records with sample type values of 'R', 'S', 'P', 'D' and 'C'. Those SAF records selected will have the first position of SAF-CONTAMINANT-ID equal to the contaminant group in the selection criteria.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 of 1
Diagram No.: 2.6.1.5 **Description:** Build Selected SAF Report Records

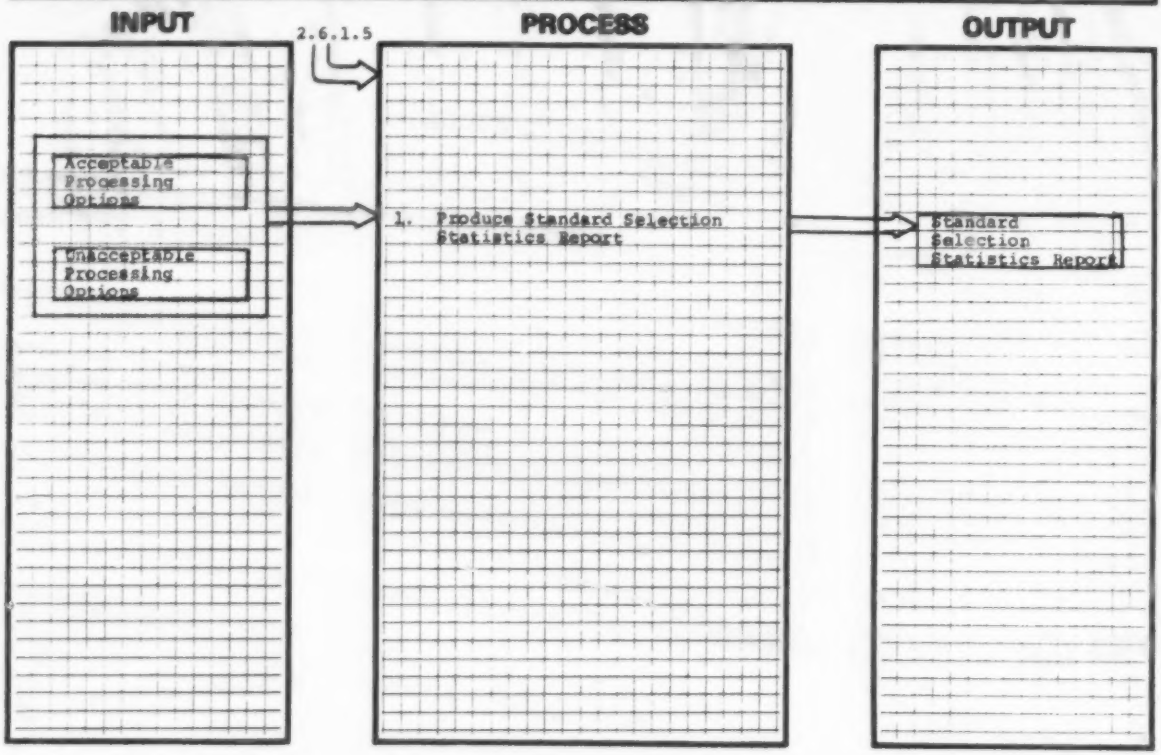


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the intermediate files using the selected Sample Analysis File (SAF) records, the Public Water Table (PWT), and the internal CVT. Append the following information from the PWT to the selected SAF to build the Analysis Select Files: a. PWT-MAILING-NAME b. PWT-STATE-REGION c. PWT-STATE-DISTRICT Match the Contaminant ID against the Internal CVT to obtain Contaminant Names. If no Contaminant Name is found on the CVT, use 'NAME NOT ON FILE'. The Analysis Select Files are subsequently used in the report programs WAQC110, WAQC111, WAQC112, and WAQC113. Selected SAF Report records are written into the appropriate Analysis Select File based on Contaminant Group with the first digit of the Contaminant ID as follows: Contaminant Group — Analysis Select File 0 — Turbidity 1 or 2 — Chemical 3 — Bacteriological 4 — Radiological		WAQC100	234 235 PWSI. 201 PWSI. 234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/4/77 **Page:** 1 **of** 1

Diagram No.: 2.6.1.6 **Description:** Produce Standard Selection Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Selection Statistics Report is always produced. The following two formats may be used: a. The Standard Selection Statistics Report contains: (1) The selection criteria (2) The total records selected under each selection criteria (3) The total of all records selected for the report (4) The percent of the file selected. b. If any Processing Options records are in error, the records and associated error messages are produced instead of or in addition to the information in a.		WAQC100	MSIS. 309 MSIS. 312

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC110
DATE: January 24, 1977

I. OBJECTIVES:

The objective of this program is to produce the Summary of Chemical Analysis Report sorted in a user-defined sequence using data from the Chemical Analysis Select File.

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Chemical/ Radiological Analysis Select File	SAFI-HEDR-REPT-RECORD	WAQC.226
		SAFI-D-REPT-RECORD	WAQC.234
2.	Data Element Table	DET-RECORD	MSIS.201

B. PROCESSING OPTIONS RECORD:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. RECORD LAYOUTS:

Not Applicable

B. RECORD LAYOUTS:

	NAME	EXHIBIT LAYOUT
1.	Summary of Chemical Analysis Report	WAQC.321
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. TURNAROUND DOCUMENTS:

Not Applicable

IV. FUNCTIONS:

1. Verify the date on the header record of the Chemical Analysis Select File. If the date is '000000', processing will terminate.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the Sort Processing Options for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Chemical Analysis Report File by constructing sort keys using the 'SORT' Processing Options and the Chemical/Radiological Analysis Select File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Chemical Analysis Select File.

5. Sort the Chemical/Radiological Analysis Report File from Step 4 into the sequence specified by the'SORT' Processing Options or the sequentially created sort key.

6. Produce the summary of Chemical Analysis Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Sort Processing Options.

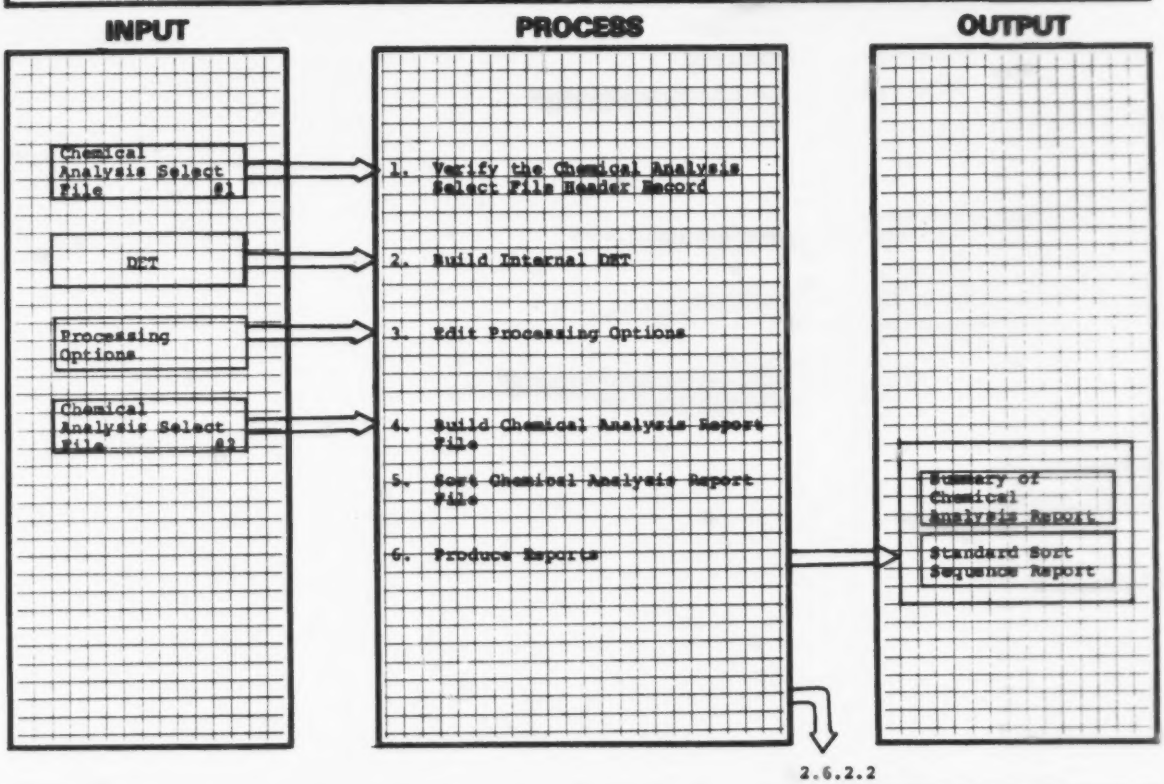
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 of 1

Diagram No.: 2.6.2.1 **Description:** Produce Summary of Chemical Analysis Report

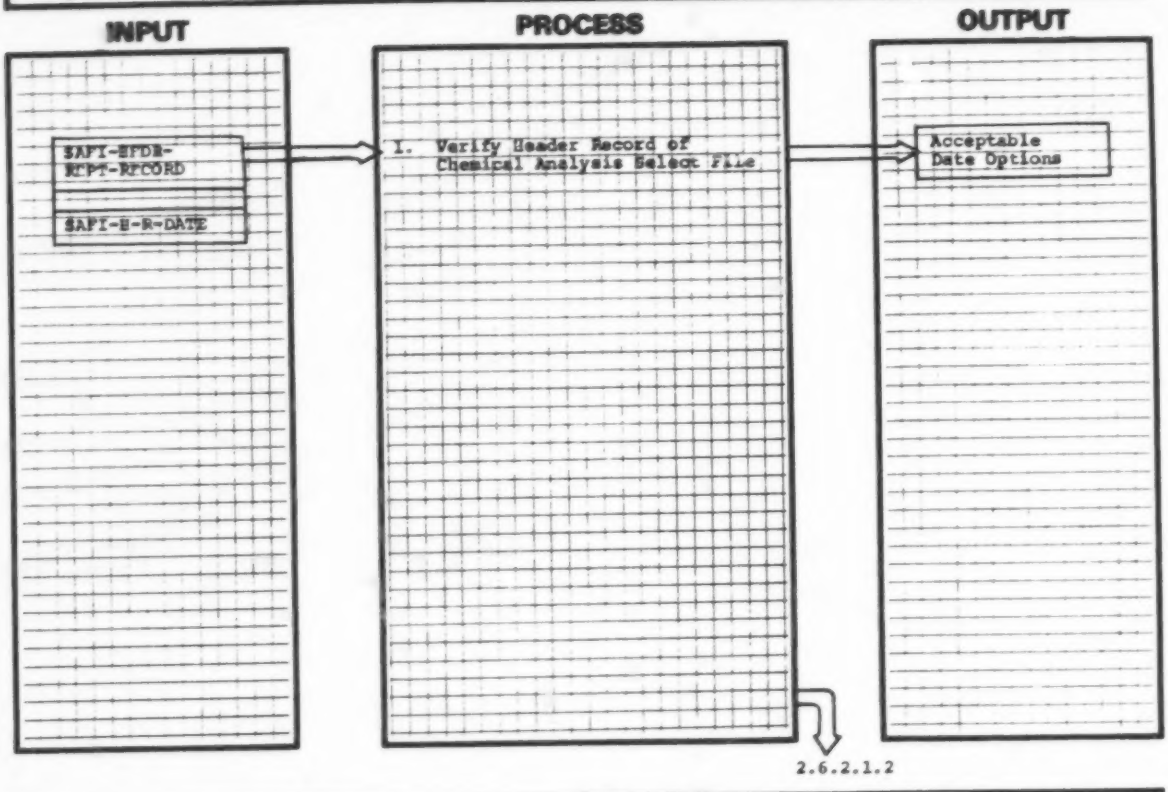


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Chemical Analysis Select File Header Record to ensure that processing is to continue.	2.6.2.1.1	WAQC110	
2	Build an internal Data Element Table (DET) from the DET.	2.6.2.1.2	WAQC110	
3	Edit the 'SORT' Processing Options. If any Processing Options are in error, processing terminates.	2.6.2.1.3	WAQC110	
4	Build the Chemical Analysis Report File from the Chemical Analysis Select File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 3.	2.6.2.1.4	WAQC110	
5	Sort the Chemical Analysis Report File by the user-defined sequence specified by the 'SORT' Processing Options.	2.6.2.1.5	WAQC110	
6	Produce the Summary of Chemical Analysis Report by printing data from the Sorted Chemical Analysis Report File. Produce the Standard Sort Sequence Report which will contain either the Sort Sequence Report or the Processing Options errors.	2.6.2.1.6	WAQC110	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 **of** 1

Diagram No.: 2.6.2.1.1 **Description:** Verify the Chemical Analysis Select File Header Record

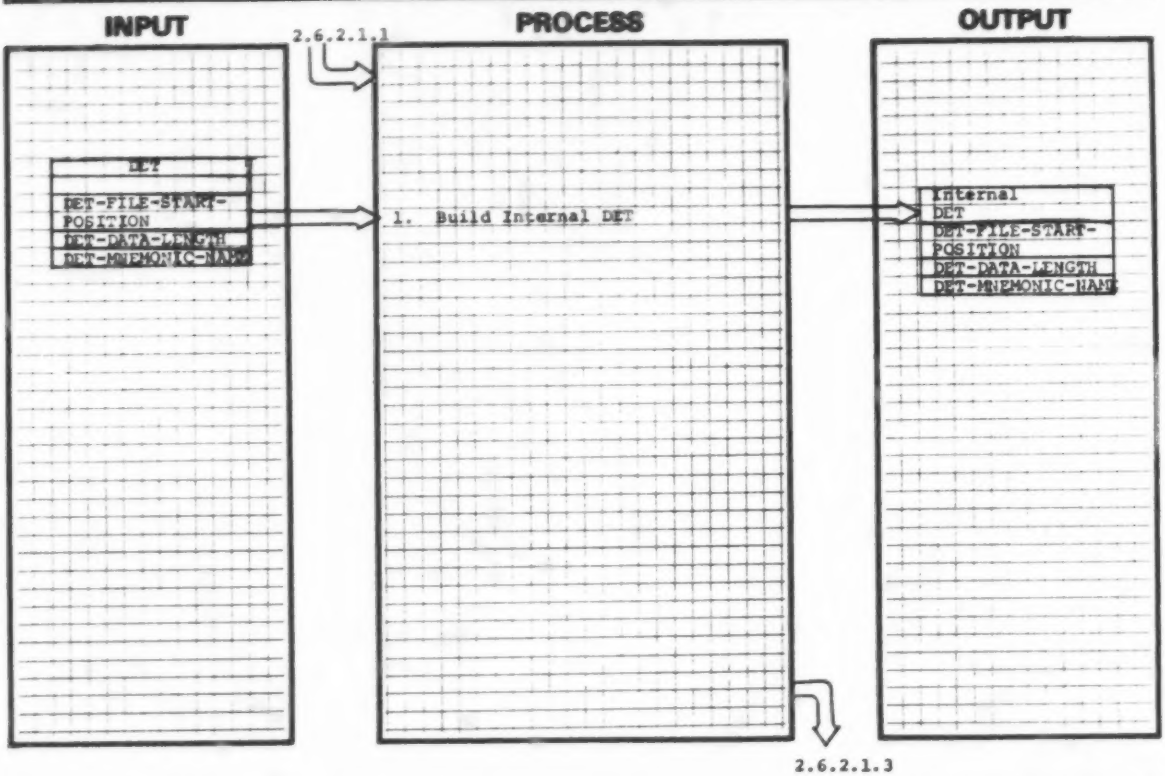


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Header Record on the Chemical Analysis Select File is written during execution of program WAQC100 and carries information from the 'PROC' record processed by that program. If, for any reason, WAQC110 terminates abnormally, the field SAFI-H-R-DATE will contain '000000' signifying that this program is also to terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for 'LOW VALUES'.		WAQC110	228

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 **of** 1

Diagram No.: 2.6.2.1.2 **Description:** Build Internal DET

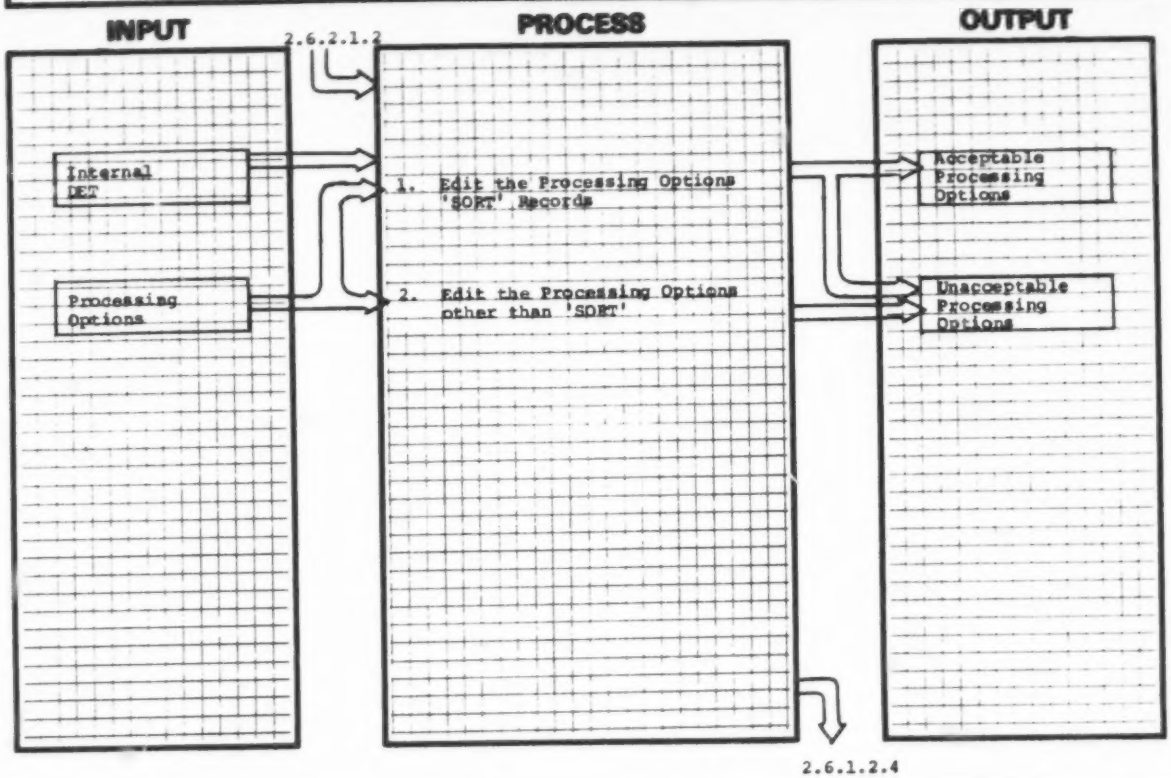


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An Internal Data Element Table (DET) is built from the DET with all records having a file ID of 'SA'. Only the file start position, data element length, and data element mnemonic are used.		WAQC110	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 **of** 1

Diagram No.: 2.6.2.1.3 **Description:** Edit Processing Options

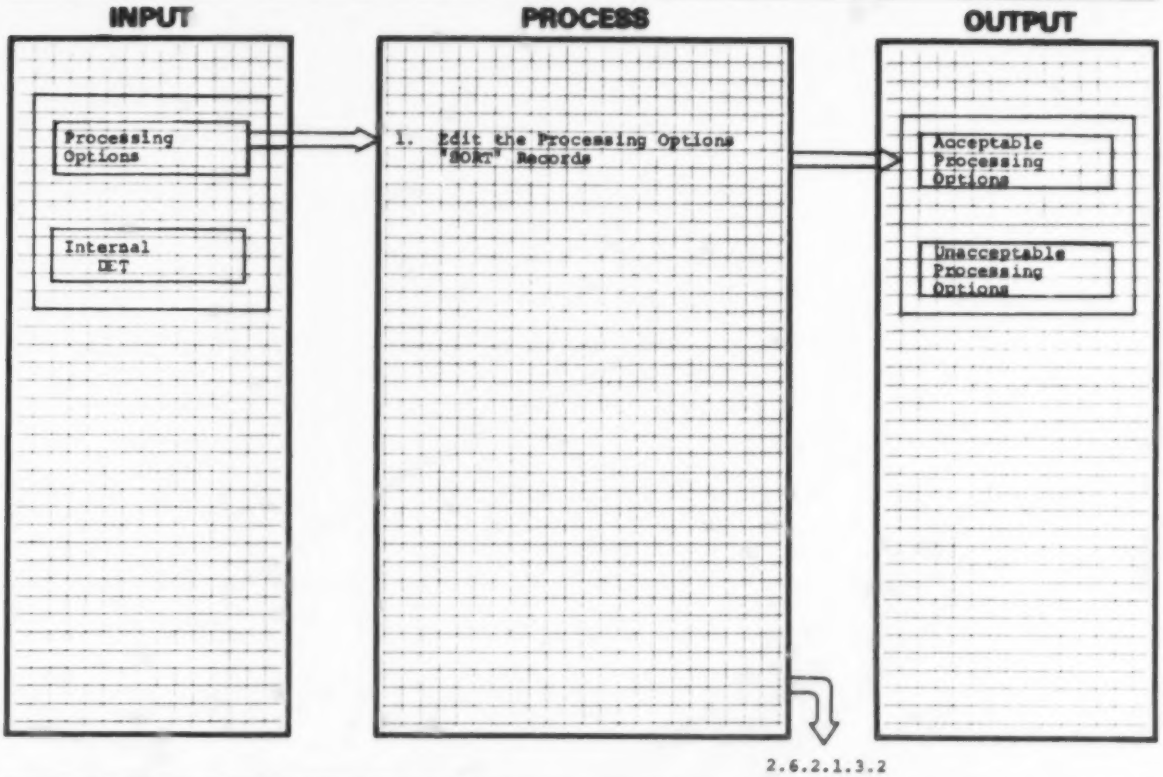


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'SORT' in positions 1-4.	2.6.2.1.3.1	WAQC110	
2	Edit the Processing Options other than 'SORT'. If found, it is an error.	2.6.2.1.3.2	WAQC110	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 **of** 1

Diagram No.: 2.6.2.1.3.1 **Description:** Edit the Processing Options 'SORT' Records

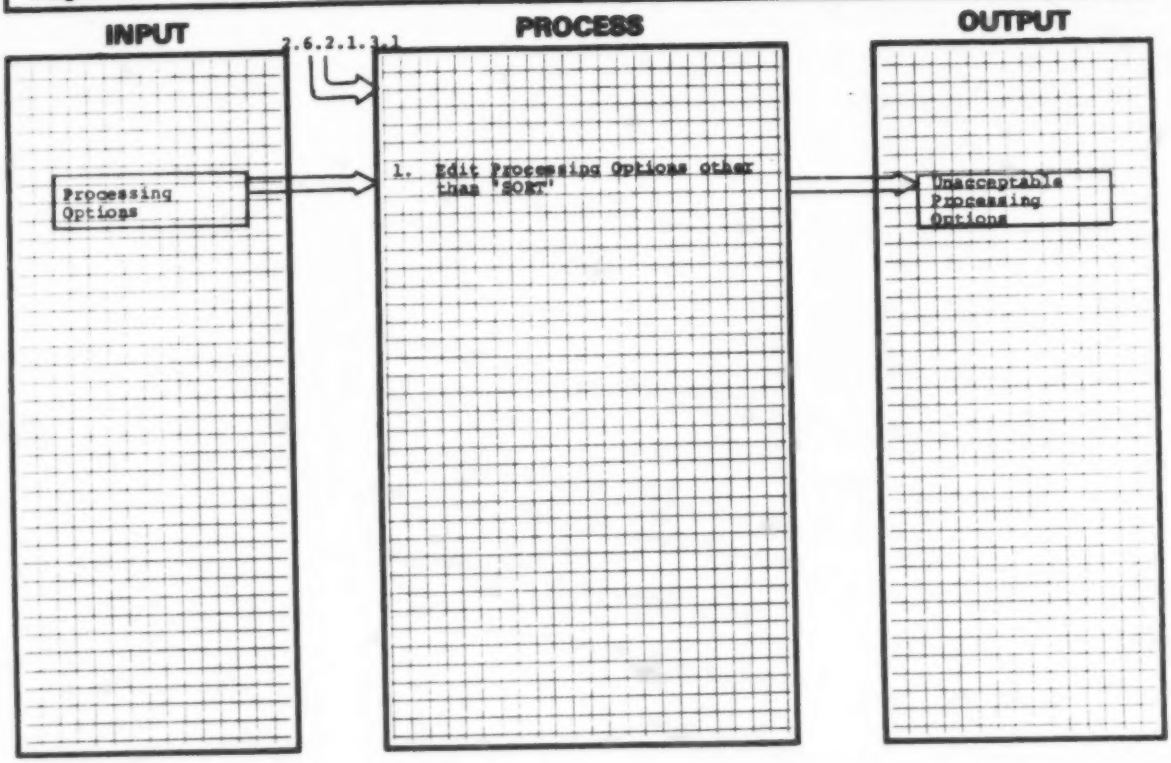


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' (ascending) or 'D' (descending). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC110	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 of 1

Diagram No.: 2.6.2.1.3.2 **Description:** Edit the Processing Options other than 'SORT'

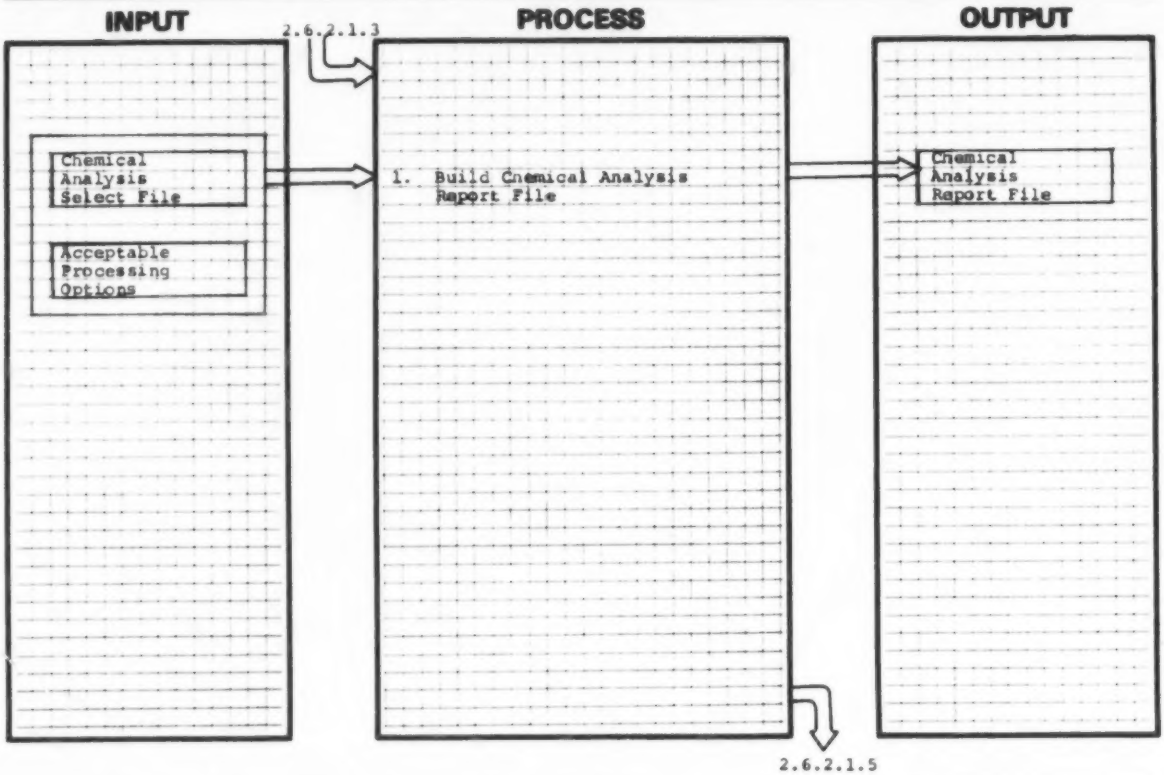


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-6. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing terminates. Note: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.		WAQC110	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/7/77 **Page:** 1 **of** 3

Diagram No.: 2.6.2.1.4 **Description:** Build Chemical Analysis Report File



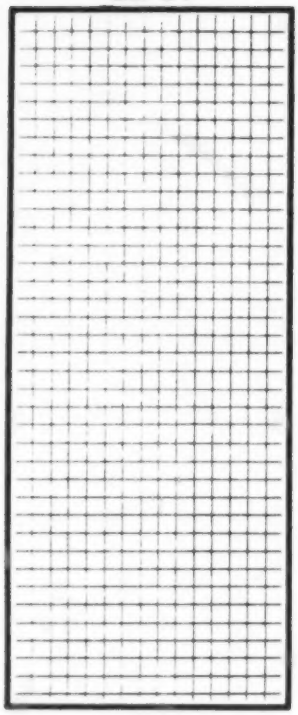
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Chemical Analysis Select File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire Chemical Analysis Select File record as an array of one character values. b. Match the SAFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Chemical Analysis Select File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Chemical Analysis Select File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alpnanumeric = 00000.012300000		WAQC110	228 234

MODEL STATE INFORMATION SYSTEM

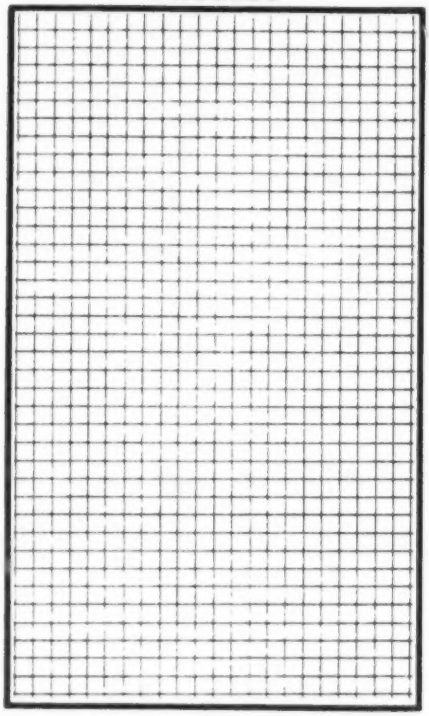
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/4/77 Page: 2 of 3

Diagram No.: 2.6.2.1.4 Description: Build Chemical Analysis Report File

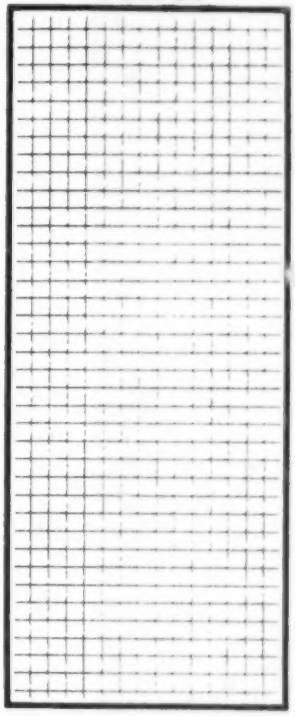
INPUT



PROCESS



OUTPUT

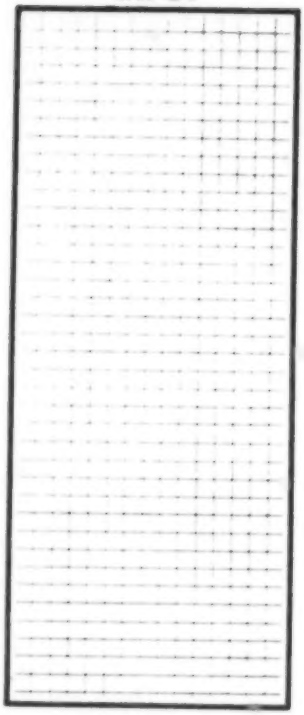


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case, all possible values in the array must be checked as follows: (a) If the SAFI-SORT-MODE = 'A' (ascending), the lowest value of the data element must be used in building the sort key. (b) If the SAFI-SORT-MODE = 'D' (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the SAFI-SORT-MODE = 'A' (ascending), move the value obtained in c. to the proper location in the sort key. If the SAFI-SORT-MODE = 'D' (descending), redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the SAFI-SORT-SEQUENCE.			

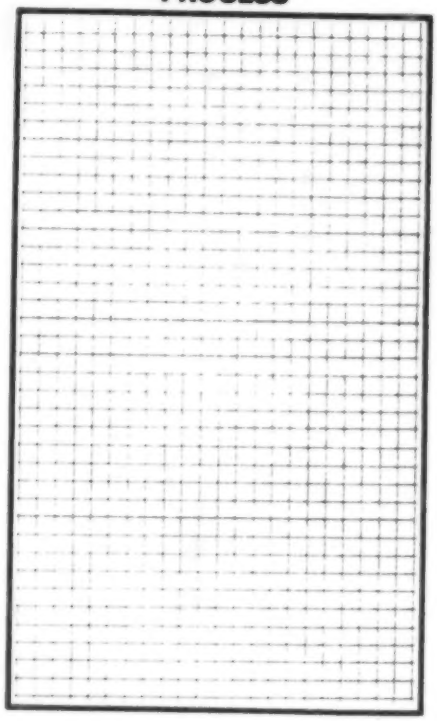
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/4/77 Page: 3 of 3
Diagram No.: 2.6.2.1.4 Description: Build Chemical Analysis Report File

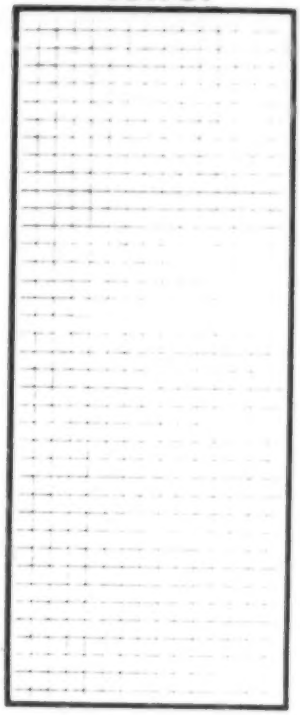
INPUT



PROCESS



OUTPUT

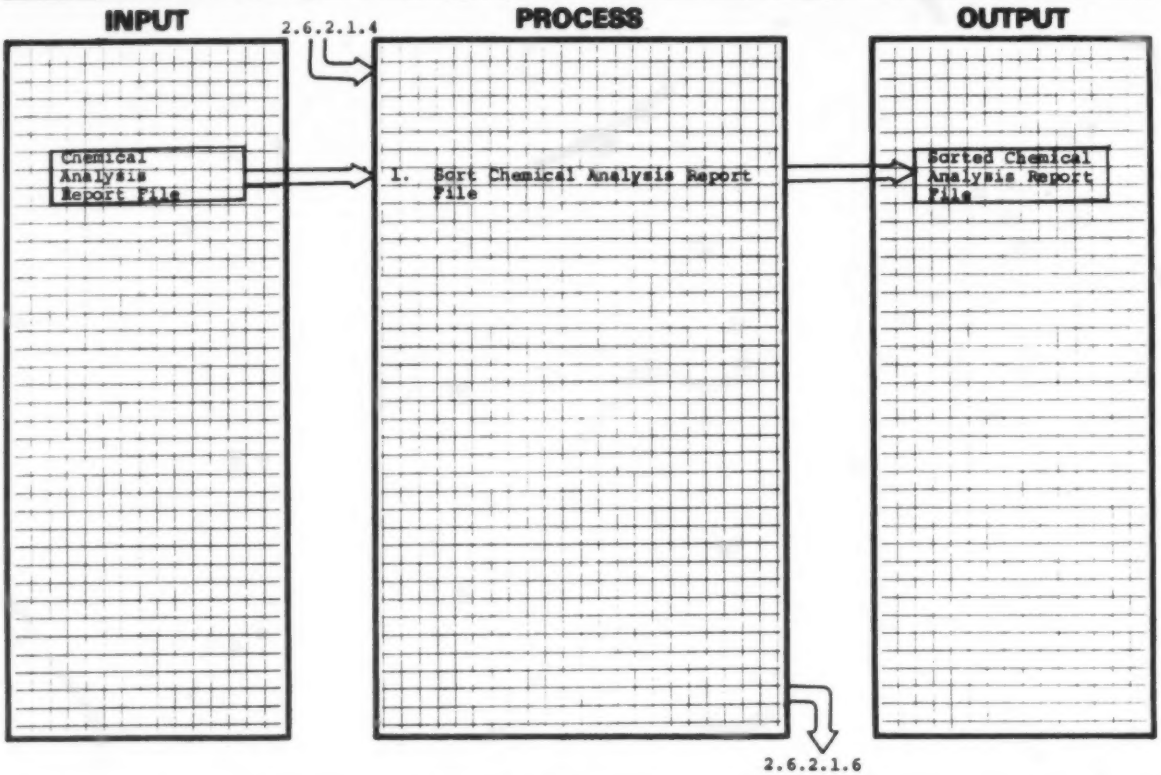


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Note: If there are no 'SORT' Processing Options records, build a sort key in the sequence of Region, District, PWS-ID, and Contaminant ID for each record on the file. Note: The first record of the Chemical Analysis Select File is a header record containing information to be used in the report header and is not to be used when building a sort key or written to the Chemical Analysis Report File.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 of 1

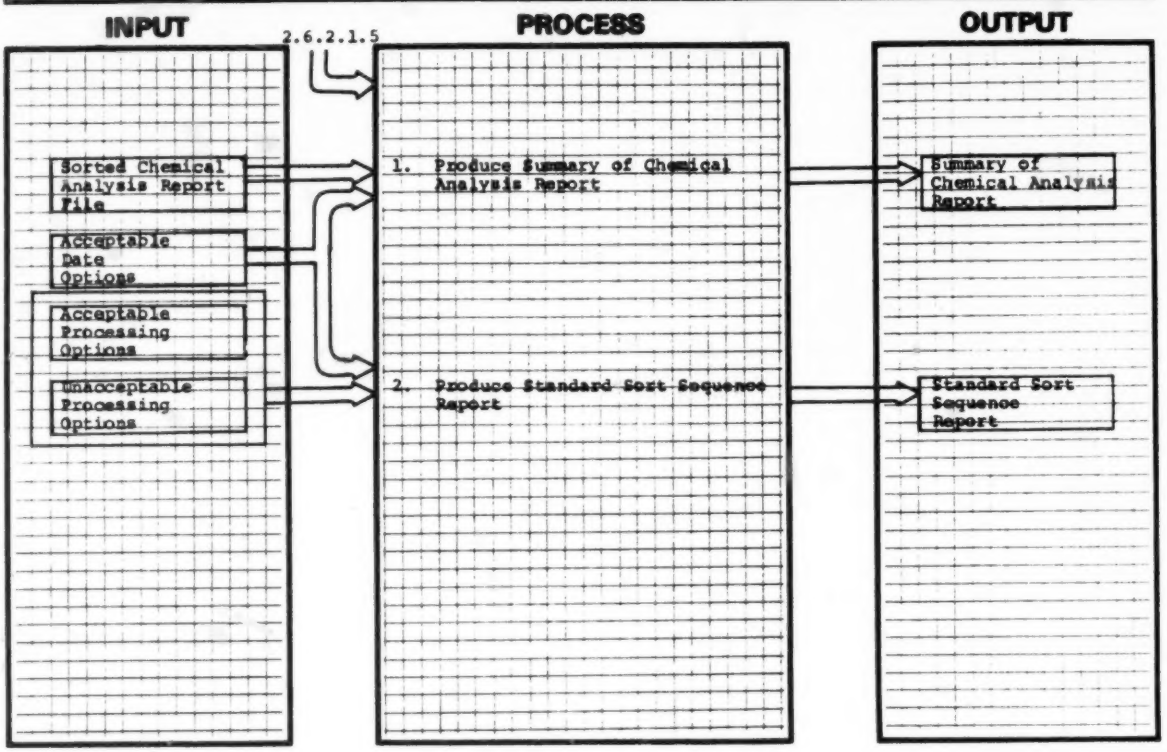
Diagram No.: 2.6.2.1.5 **Description:** Sort Chemical Analysis Report File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Chemical Analysis Report File in ascending sequence according to the thirty position sort key.		WAQC110	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 **of** 2
Diagram No.: 2.6.2.1.6 **Description:** Produce Reports



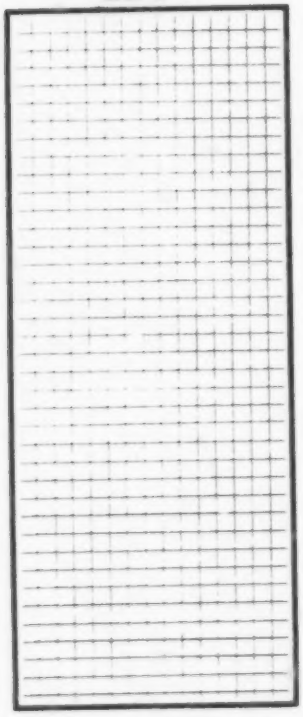
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Summary of Chemical Analysis Report from data on the Sorted Chemical Analysis Report file. The result fields are converted from absolute values to decimal values using the value in the decimal indicator for the field. For example: If SAFI-R-MCL-VIOLATED is 12345 and SAFI-R-MCL-VIOLATED-DECIMALS is 2, then the field on the report will be 123.45 To get the date for the report, use the to and from dates and the report date from the header record (see HIPO 2.6.2.1.1) of the Chemical Analysis Select File. Position 25 of this header record indicates whether all detail sample data (value of 'L') or only the latest (by sample date) detail sample data (value of 'S') is to be printed along with any summary totals. Summaries by contaminant are not produced unless PWS-ID is followed by contaminant ID on the 'SORT' Processing Options record. When contaminant summaries are produced, they will appear on the report in the following order by sample type: C - Check sample summary D - Regular distribution sample summary P - Plant tap sample summary R - Raw water sample summary S - Special sample summary The Low Analysis Result for the summary is the lowest average result within the group being summarized. The High Analysis Result for the summary is the highest average result within the group being summarized. The Average Analysis Result is obtained by adding all analysis results of the group being summarized and dividing by the number in the group.		WAQC110	228 321

MODEL STATE INFORMATION SYSTEM

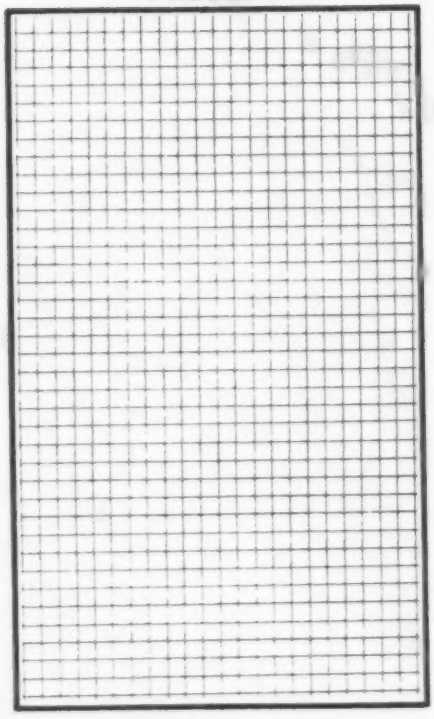
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 2 **of** 2

Diagram No.: 2.6.2.1.6 **Description:** Produce Reports

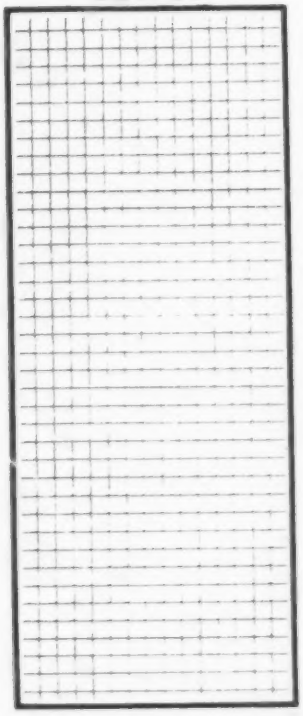
INPUT



PROCESS



OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Summaries by Region are not produced unless Region is either a level '01' or level '02' (with District as level '01') sort sequence on the 'SORT' Processing Options records. Summaries by District are not produced unless District is either a level '01' or level '02' (with Region as level '01') sort sequence on the 'SORT' Processing Options records. The summary by State is always produced on the last page of the reports. To obtain the report described in WAQC.321 (Summary of Chemical Analysis Report), the 'SORT' Processing Options should be as follows: Sort Sequence — Mnemonic Name 01 — SA-REGION 02 — SA-DISTRIC 03 — SA-PWS-ID 04 — SA-CONID When producing the report, do the following: a. Convert all Julian dates (DDDYY) to calendar format (MM/DD/YY) b. Use 'Yes' or 'No' for Violation (State and Federal) fields on detail lines. Use the number of State and Federal violations on contaminant summary lines. c. Use the field "number of samples taken" for the "number samples" on the detail and contaminant summary lines.			
2	Produce the Standard Sort Sequence Report. If any processing error messages are printed, the Processing Options record image and all associated error messages are printed, otherwise produce the report of the sort sequence.		WAQC110	MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC111
DATE: January 18, 1977

I. OBJECTIVES:

The objective of this program is to produce the Summary of Radiological Analysis Report sorted in a user-defined sequence using data from the Radiological Analysis Select File.

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Chemical/ Radiological Analysis Select File	SAFI-HEDR-REPORT-RECORD	WAQC.228
		SAFI-D-REPT-RECORD	WAQC.234
2.	Data Element Table	DET-RECORD	MSIS.201

B. PROCESSING OPTIONS RECORD:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. RECORD LAYOUTS:

Not Applicable

B. REPORT LAYOUTS:

	NAME	EXHIBIT LAYOUT
1.	Summary of Radiological Analysis Report	WAQC.322
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. TURNAROUND DOCUMENTS:

Not Applicable

IV. FUNCTIONS:

1. Verify the date on the header record on the Radiological Analysis Select File. If the date is '000000', processing will terminate.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the Sort Processing Options for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Radiological Analysis Report File by constructing sort keys using the 'SORT' Processing Options and the Radiologival Analysis Select File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Radiological Analysis Select File.

5. Sort the Radiological Analysis Report File from Step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Summary of Radiological Analysis Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

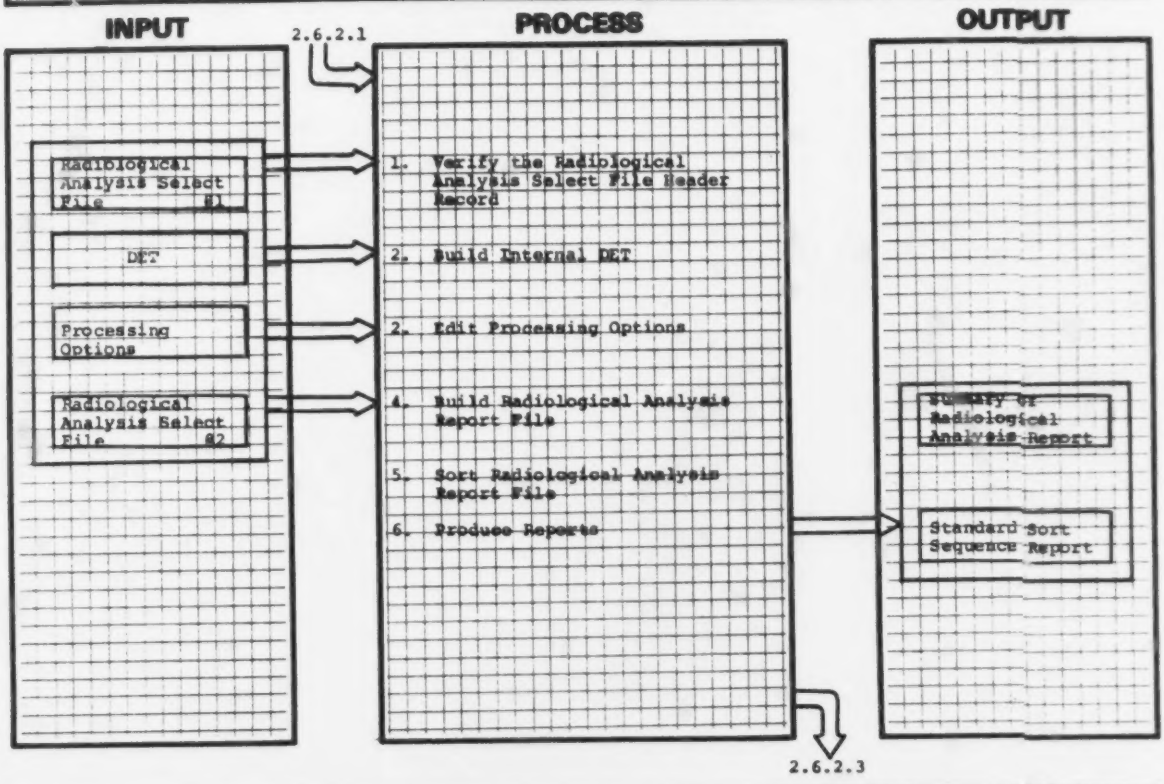
1. Sort Processing Options.

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 of 1
Diagram No.: 2.6.2.2 **Description:** Produce Summary of Radiological Analysis Report

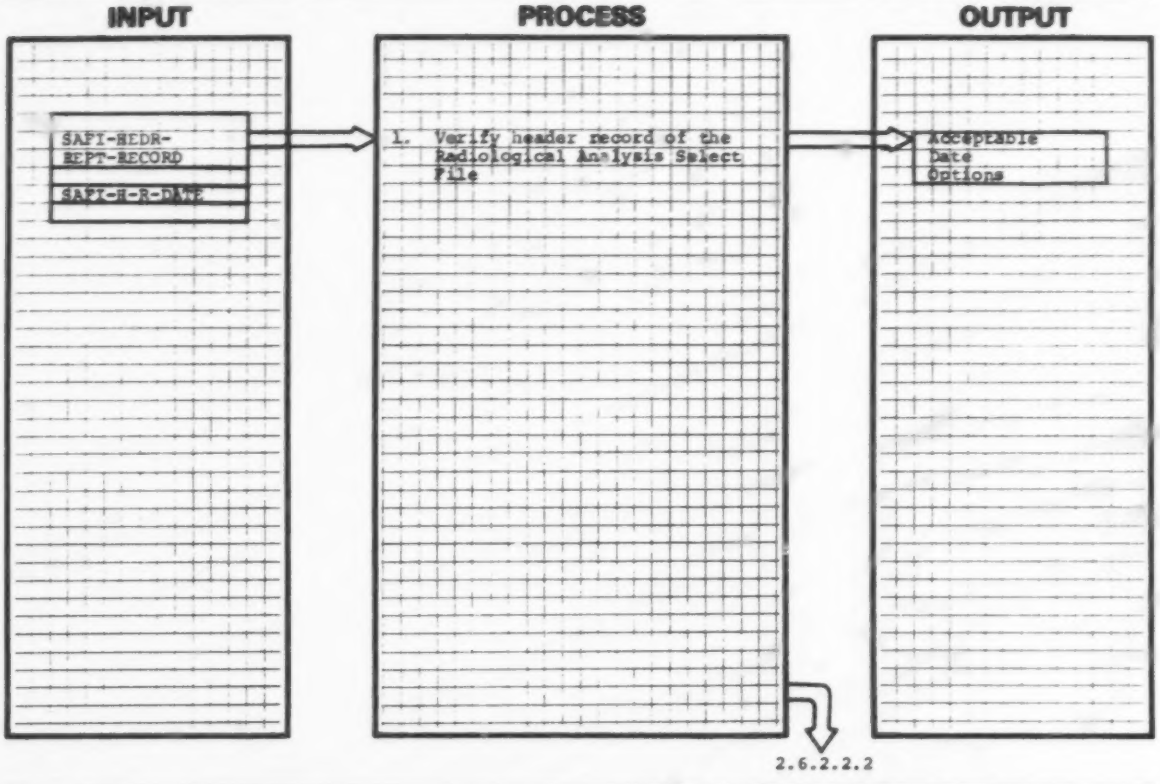


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Radiological Analysis Select File Header Record to ensure that processing is to continue.	2.6.2.2.1	WAQC111	
2	Build an Internal Data Element Table (DET) from the DET.	2.6.2.2.2	WAQC111	
3	Edit the 'SORT' Processing Options. If any Processing Options are in error, processing terminates.	2.6.2.2.3	WAQC111	
4	Build the Radiological Analysis Report File from the Radiological Analysis Select File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 3.	2.6.2.2.4	WAQC111	
5	Sort the Radiological Analysis Report File by the user-defined sequence specified by the 'SORT' Processing Options.	2.6.2.2.5	WAQC111	
6	Produce the Summary of Radiological Analysis Report by printing data from the Sorted Radiological Analysis Report File. Produce the Standard Sort Sequence Report which will contain either the Sort Sequence Report or the Processing Options errors.	2.6.2.2.6	WAQC111	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 **of** 1

Diagram No.: 2.6.2.2.1 **Description:** Verify the Radiological Analysis Select File Header Record

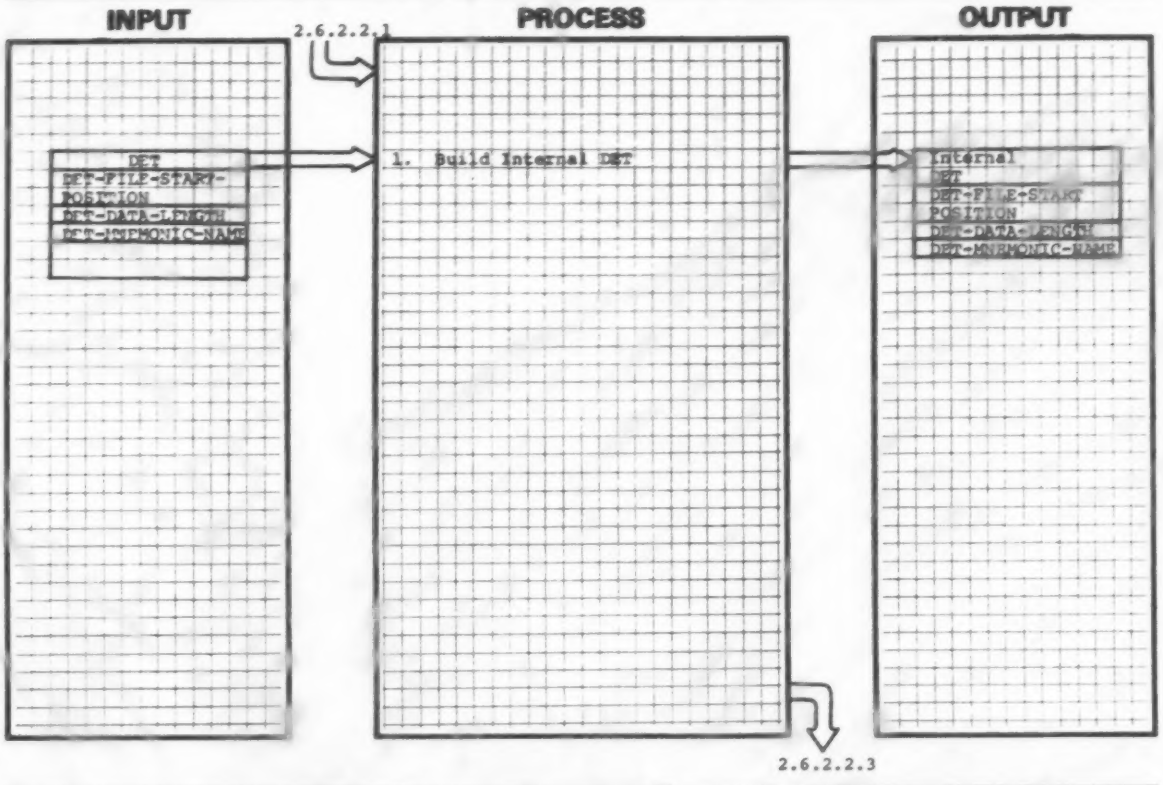


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Radiological Analysis Select File is written during execution of program WAQC100 and carries information from the 'PROC' record processed by that program. If, for some reason, WAQC100 terminates abnormally, the field SAFI-H-R-DATE will contain '000000' signifying that this program is also to terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-4 of the record are edited for 'LOW VALUES'.		WAQC111	228

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 **of** 1

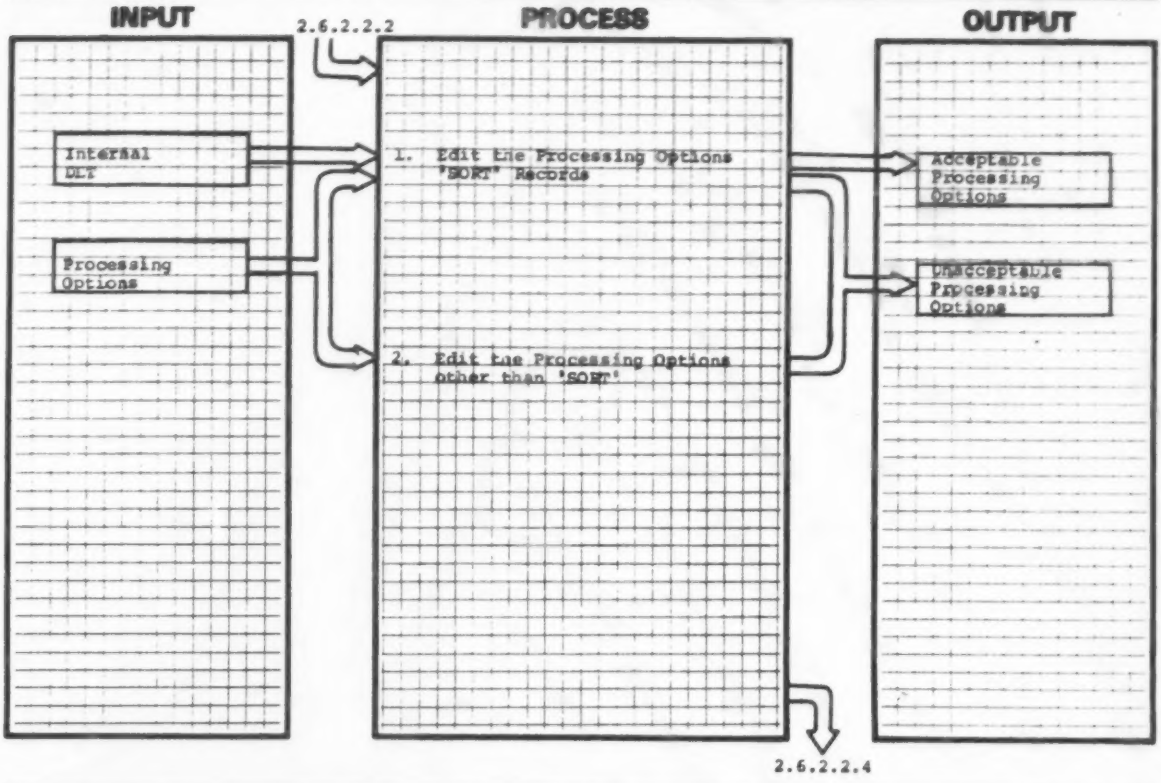
Diagram No.: 2.6.2.2.2 **Description:** Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An Internal Data Element Table (DET) is built from the DET with all records having a file ID of 'SA'. Only the file start position, data element length, and data element mnemonic are used.		WAQC111	MSIS. 201

MODEL STATE INFORMATION SYSTEM

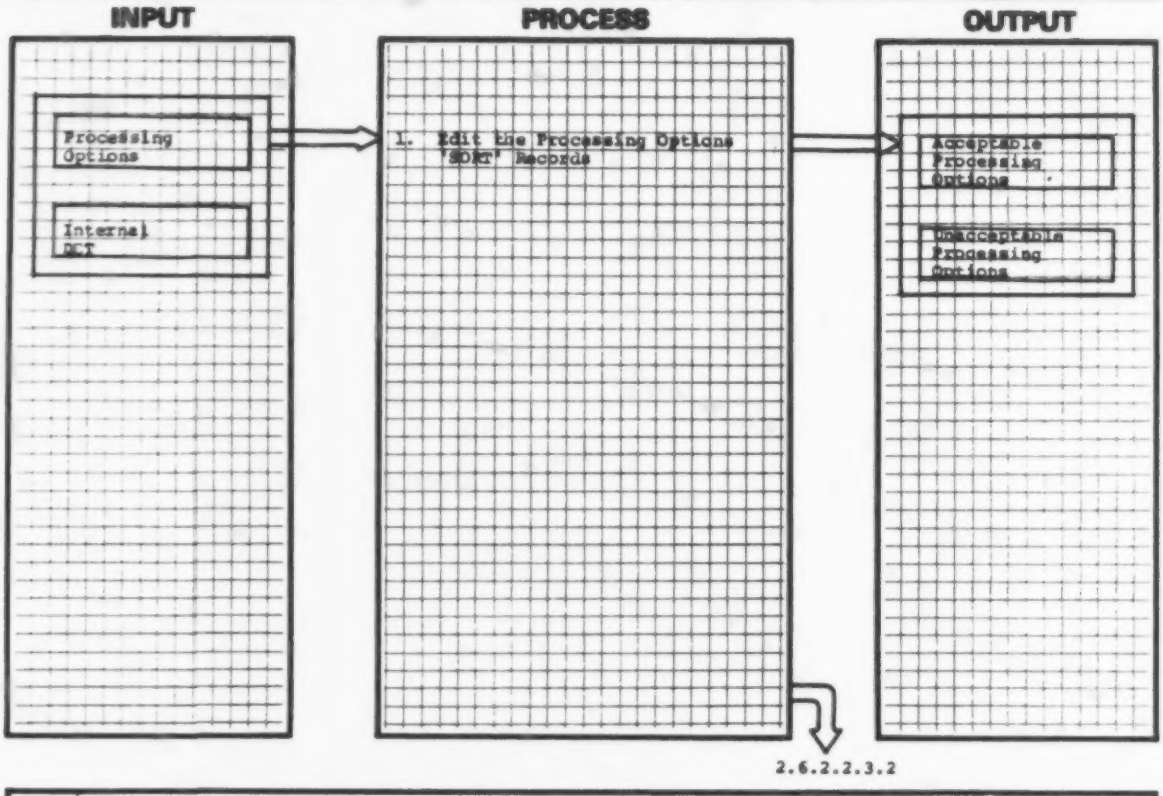
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3/6/77 **Page:** 1 **of** 1
Diagram No.: 2.6.2.2.3 **Description:** Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'SORT' in positions 1-4.	2.6.2.2.3.1	WAQC111	
2	Edit for Processing Options other than 'SORT'. If found, it is an error.	2.6.2.2.3.2	WAQC111	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 **of** 1
Diagram No.: 2.6.2.2.1.1 **Description:** Edit the Processing Options 'SORT' Records

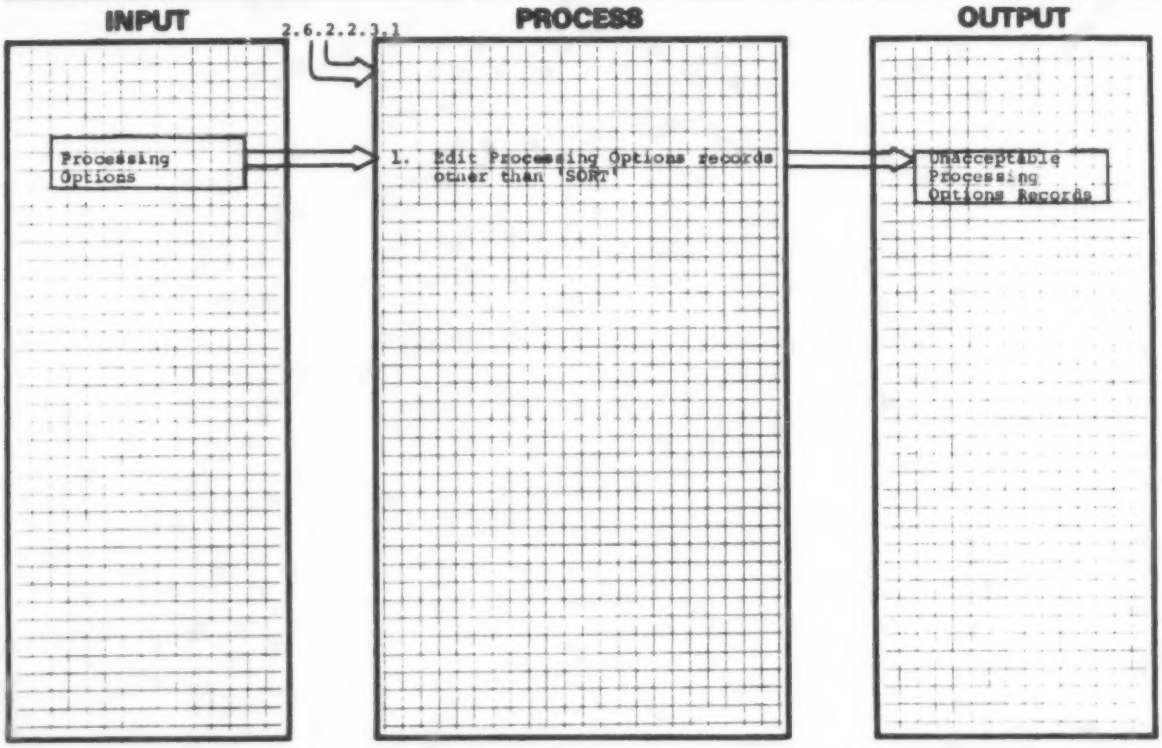


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' (ascending) or 'D' (descending). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC111	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 of 1

Diagram No.: 2.6.2.2.3.2 **Description:** Edit the Processing Options Other Than 'SORT'

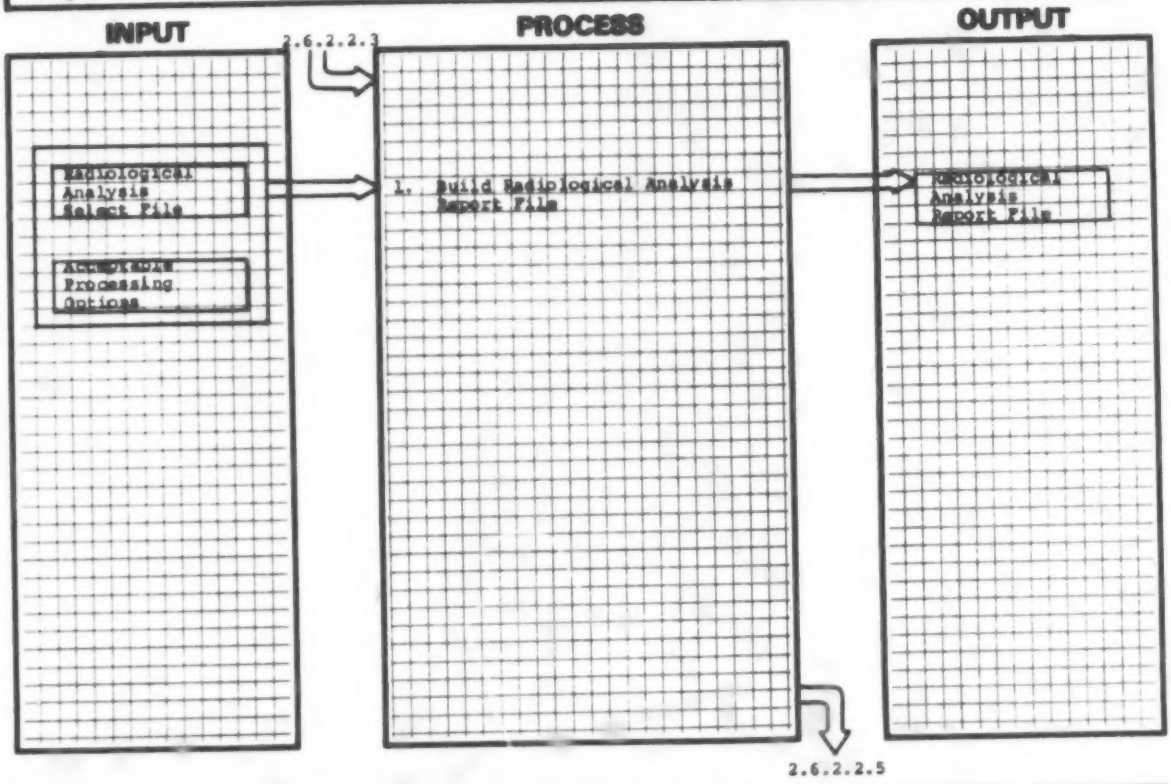


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing terminates. Note: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.		WAQC111	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 of 3

Diagram No.: 2.6.2.2.4 **Description:** Build Radiological Analysis Report File



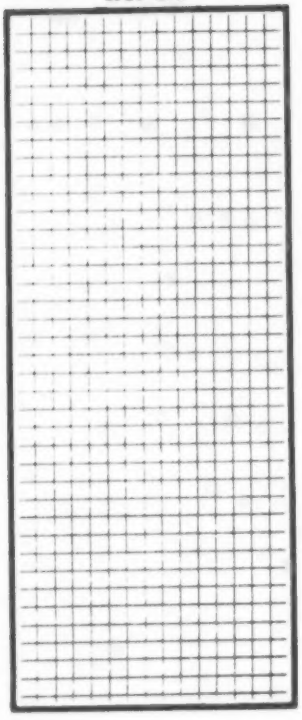
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Radiological Analysis Select File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Radiological Analysis Select File record as an array of one character values. b. Match the SAFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Radiological Analysis Select File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Radiological Analysis Select File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in positition 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		WAQC111	228 234

MODEL STATE INFORMATION SYSTEM

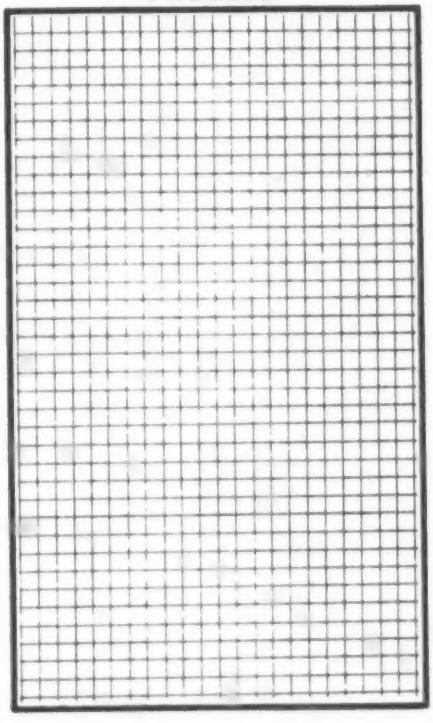
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/4/77 Page: 2 of 3

Diagram No.: 2.6.2.2.4 Description: Build Radiological Analysis Report File

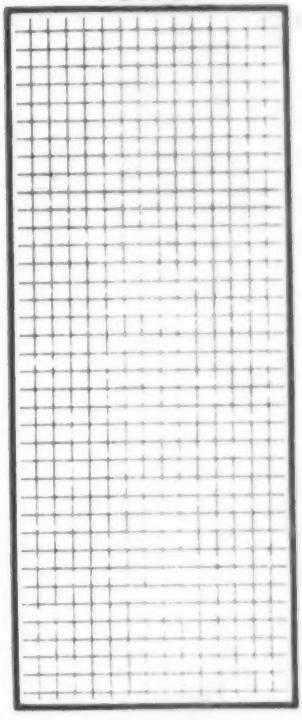
INPUT



PROCESS



OUTPUT



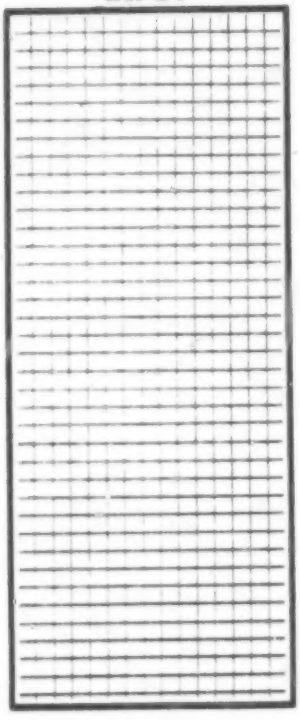
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case, all possible values in the array must be checked as follows: (a) If the SAFI-SORT-MODE = 'A' (ascending), the lowest value of the data element must be used in building the sort key. (b) If the SAFI-SORT-MODE = 'D' (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as an (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the SAFI-SORT-MODE = 'A' (ascending) move the value obtained in c. to the proper location in the sort key. If the SAFI-SORT-MODE = 'D' (descending), redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the SAFI-SORT-SEQUENCE.			

MODEL STATE INFORMATION SYSTEM

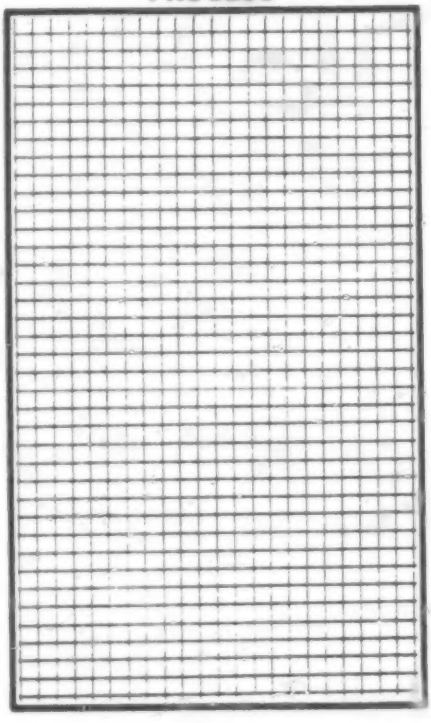
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/4/77 Page: 3 of 3

Diagram No.: 2.6.2.2.4 Description: Build Radiological Analysis Report File

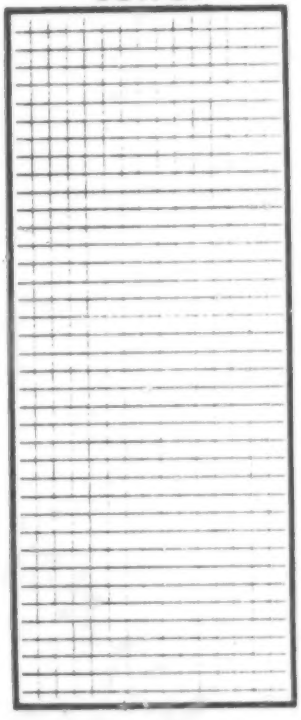
INPUT



PROCESS



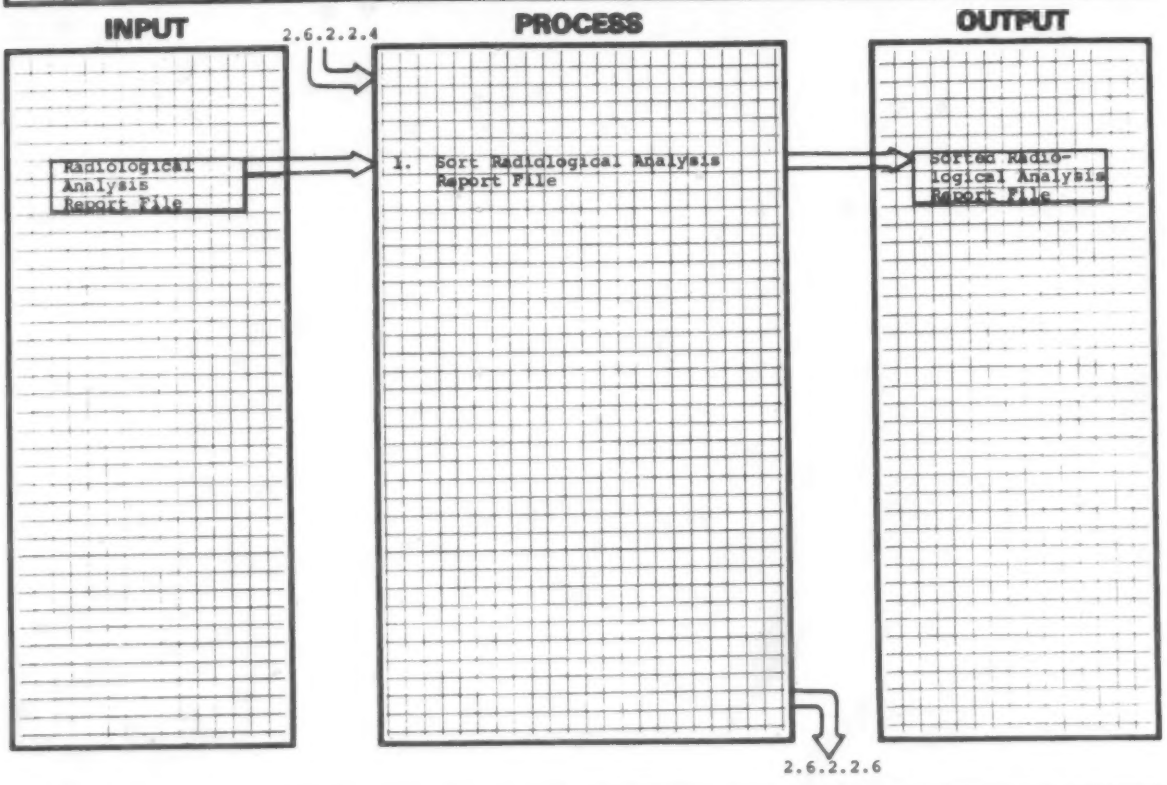
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Note: If there are no 'SORT' Processing Options records, build a sort key in the sequence of Region, District, PWS-ID, and Contaminant-ID for each record on the file. Note: The first record of the Radiological Analysis Select File is a header record containing information to be used in the report header and is not to be used when building a sort key or written to the Radiological Analysis Report File.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 1 of 1
Diagram No.: 2.6.2.2.5 **Description:** Sort Radiological Analysis Report File

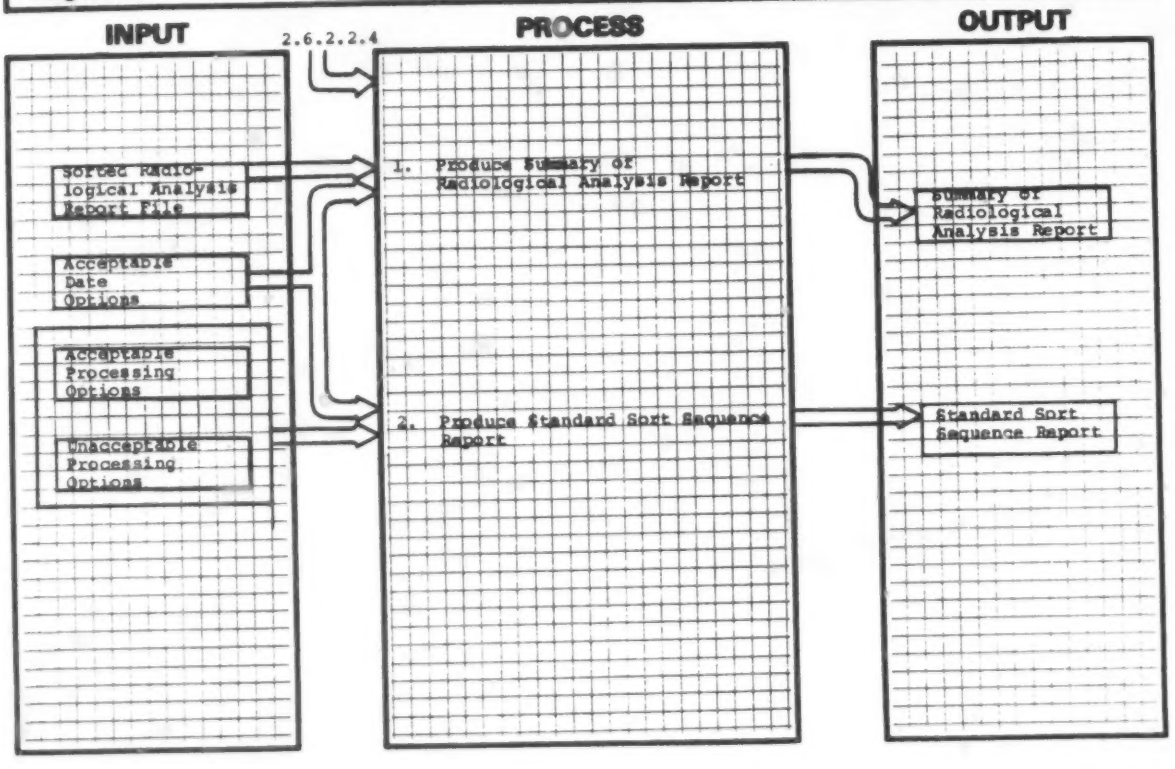


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Radiological Analysis Report File in ascending sequence according to the thirty position sort key.		WAQC111	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3/4/77 Page: 1 of 2

Diagram No.: 2.6.2.2.6 Description: Produce Reports

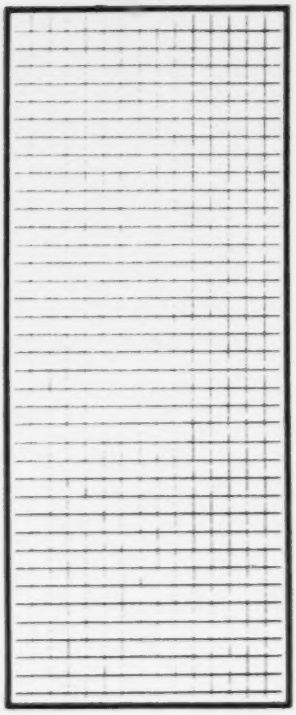


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Summary of Radiological Analysis Report from data on the Sorted Radiological Analysis Report File. The result fields are converted from absolute values to decimal values using the value in the decimal indicator for the field. For example: If SAFI-R-MCL-VIOLATED is 12345 and SAFI-R-MCL-VIOLATED-DECIMALS is 2, then the field on the report will be 123.45 To get the dates for the report, use the to and from dates and the report date from the header record (see HIPO 2.6.2.2.1) of the Radiological Analysis Select File. Position 25 of this header record indicates whether all detail sample data (value of 'L') or only the latest (by sample date) detail sample data (value of 'S') is to be printed. Summaries by Contaminant are not produced unless PWS-ID is followed by Contaminant ID on the 'SORT' Processing Options records. When Contaminant summaries are produced, they will appear on the report in the following order by sample type: C - Check sample summary D - Regular distribution sample summary P - Plant tap sample summary R - Raw water sample summary S - Special sample summary The Low Analysis Result for the summary is the lowest average result within the group being summarized. The High Analysis Result for the summary is the highest average result witnin the group being summarized. The Average Analysis Result is obtained by adding all analysis results of the group being summarized and dividing by the number in the group.		WAQC111	228 322

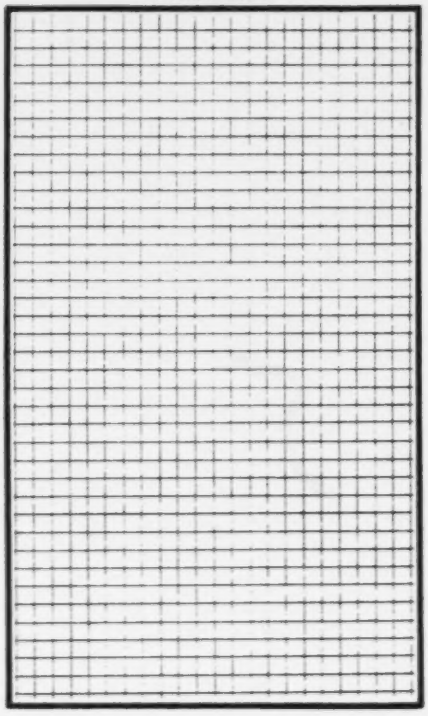
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3/4/77 **Page:** 2 **of** 2
Diagram No.: 2.6.2.2.6 **Description:** Produce Reports

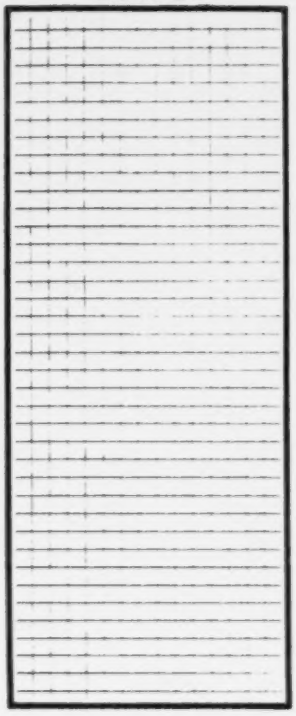
INPUT



PROCESS



OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Summaries by Region are not produced unless Region is either a level '01' or level '02' (with District as level '01') sort sequence on the 'SORT' Processing Options records. Summaries by District are not produced unless District is either a level '01' or level '02' (with Region as level '01') sort sequence on the 'SORT' Processing Options records. The summary by State is always produced on the last page of the reports. To obtain the report described in WAQC.322 (Summary of Radiological Analysis Report), the 'SORT' Processing Options should be as follows: Sort Sequence — Mnemonic Name 01 — SA-REGION 02 — SA-DISTRIC 03 — SA-PWS-ID 04 — SA-CONID When producing the report, do the following: a. Convert all Julian dates (DDDYY) to calendar format (MM/DD/YY) b. Use 'Yes' or 'No' for Violation (State and Federal) fields on detail lines. Use the number of State and Federal Violations on contaminant summary lines. c. Use the field "number of samples taken" for the "number samples" on the detail and contaminant summary lines.			
2	Produce the Standard Sort Sequence Report. If any Processing Options error messages are printed, the Processing Options record image and all associated error messages are printed, otherwise produce the report of the sort sequence.			MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC112
DATE: January 25, 1977

I. OBJECTIVES:

The objective of this program is to produce the Summary of Bacteriological Analysis Report sorted in a user-defined sequence using data from the Bacteriological Analysis Select File.

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Bacteriological Select File	SAFI-HEDR-REPORT-RECORD SAFI-S-REPT-RECORD	WAQC.228 WAQC.235
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Record:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Summary of Bacteriological Analysis Report	WAQC.323
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify the date on the header record of the Bacteriological Analysis Select File. If the date is '000000', processing will terminate.

2. Build an internal Data Element Table (DET) from the DET.

3. Edit the Sort Processing Options for errors. The 'SORT' record is edited for syntax errors in sequence, mnemonic name, and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Bacteriological Analysis Report File by constructing sort keys using the 'SORT' Processing Options and the Bacteriological Analysis Select File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Bacteriological Analysis Select File.

5. Sort the Bacteriological Analysis Report File from Step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Summary of Bacteriological Analysis Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Sort Processing Options.

B. Data Element Descriptions:

Not Applicable.

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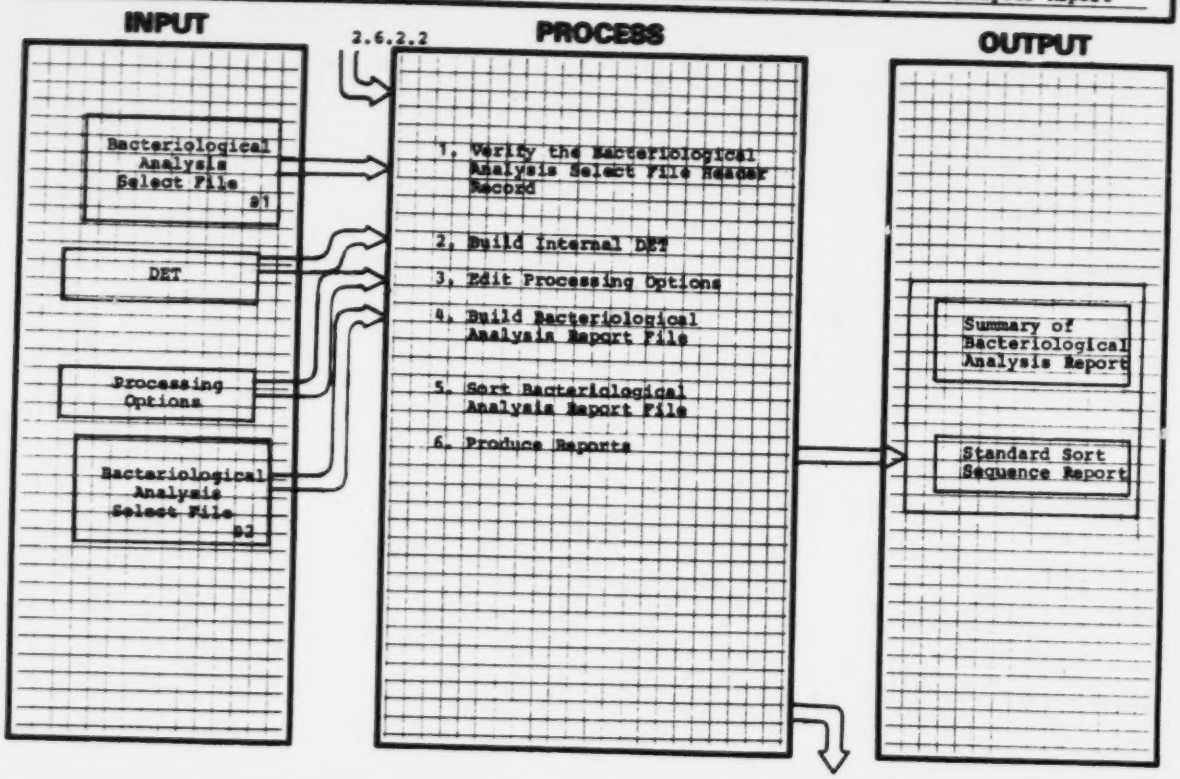
MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 1-25-77 Page: 1 of 1

Diagram No.: 2.6.2.3 Description: Produce Summary of Bacteriological Analysis Report

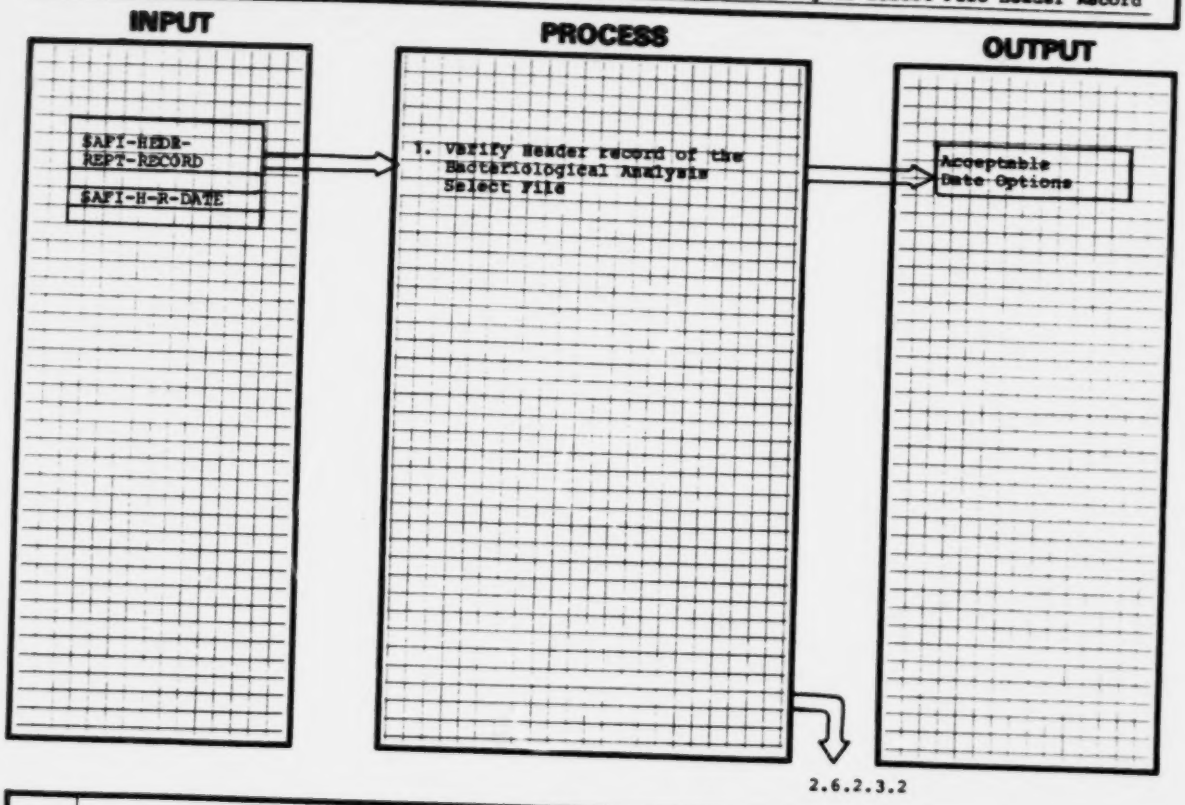


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Bacteriological Analysis Select File Header Record to ensure that processing is to continue.	2.6.2.3.1	WAQC112	
2	Build an Internal Data Element Table (DET) from the DET.	2.6.2.3.2	WAQC112	
3	Edit the 'SORT' Processing Options. If any Processing Options are in error, processing is terminated.	2.6.2.3.3	WAQC112	
4	Build the Bacteriological Analysis Report File from the Bacteriological Analysis Select File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 3.	2.6.2.3.4	WAQC112	
5	Sort the Bacteriological Analysis Report File by the user-defined sequence specified by the Sort Processing Options.	2.6.2.3.5	WAQC112	
6	Produce the Summary of Bacteriological Analysis Report by printing data from the Sorted Bacteriological Analysis Report File. Produce the Standard Sort Sequence Report which will contain either the Sort Sequence Report or the Processing Options errors.	2.6.2.3.6	WAQC112	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-25-77 Page: 1 of 1

Diagram No.: 2.6.2.3.1 Description: Verify Bacteriological Analysis Select File Header Record

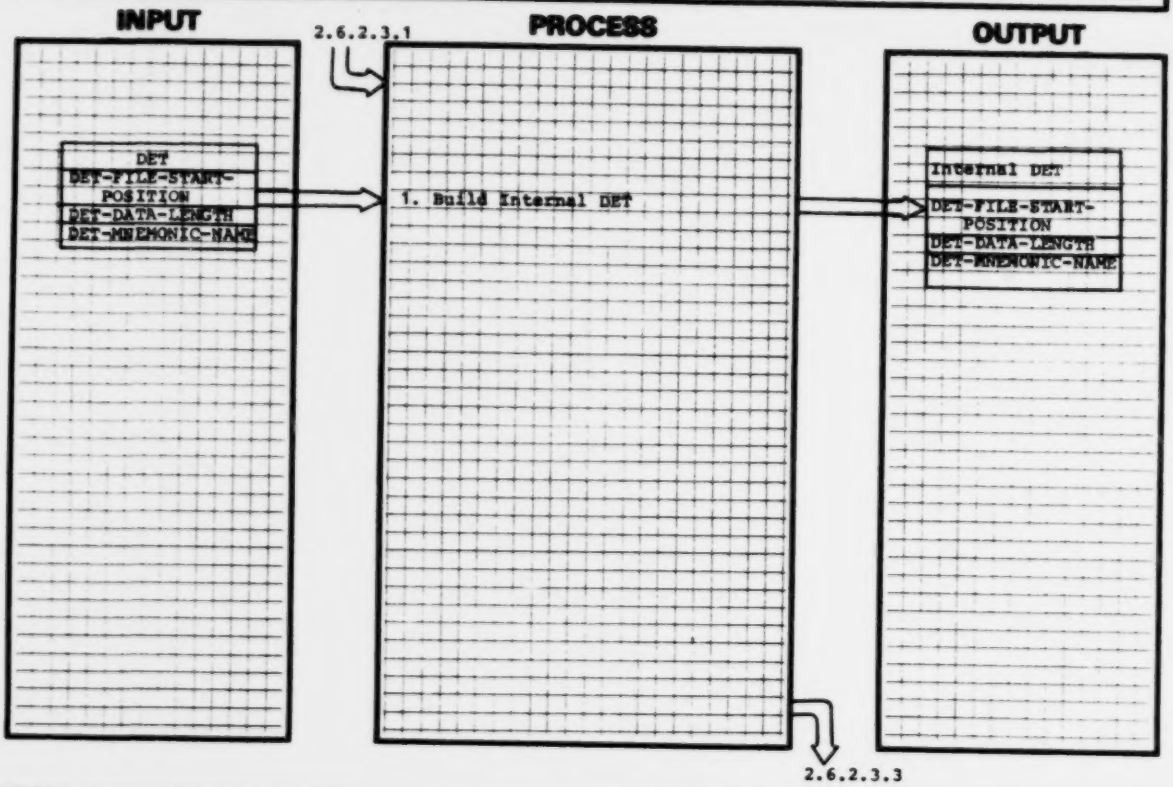


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Bacteriological Analysis Select File is written during execution of program WAQC100 and carries information from the 'PROC' record processed by that program. If, for some reason, WAQC100 terminates abnormally, the field SAFI-H-R-DATE will contain '000000' signifying that this program is also to terminate without report production. To ensure that the first record is indeed the expected header record, positions 1-6 of the record are edited for 'LOW VALUES'.		WAQC112	228

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-25-77 Page: 1 of 1

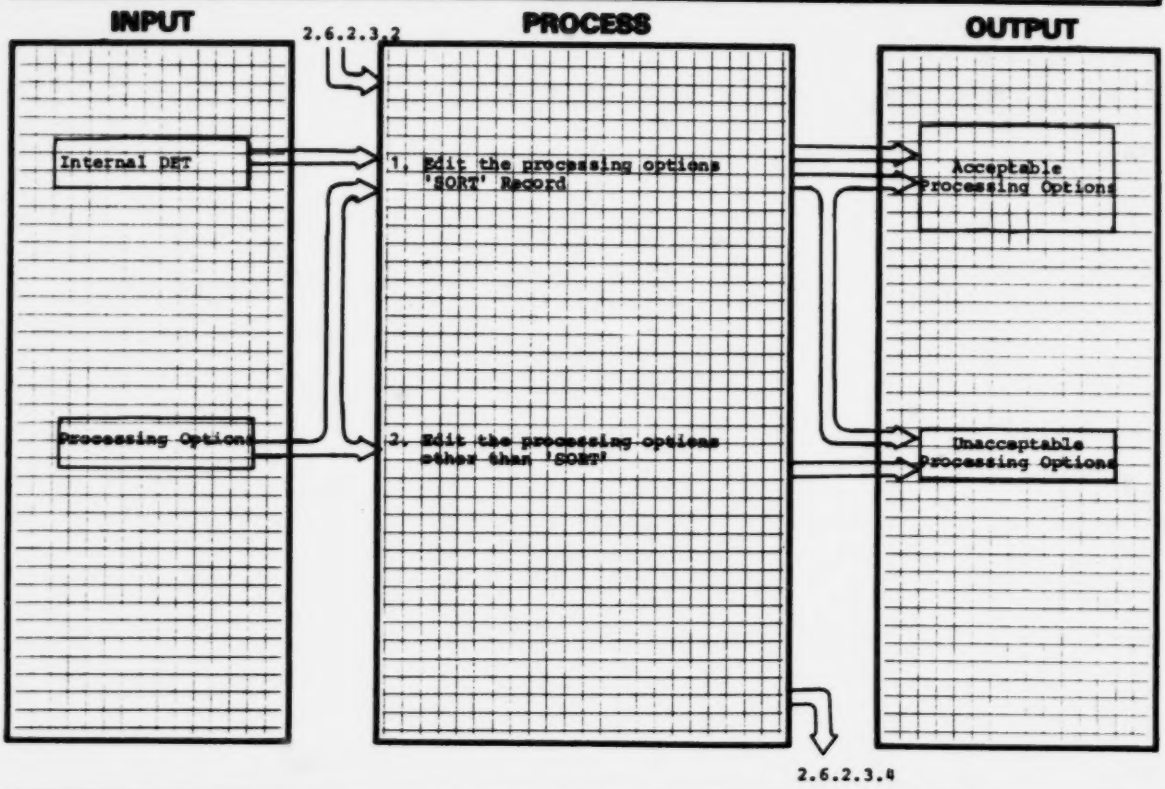
Diagram No.: 2.6.2.3.2 Description: Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An Internal Data Element Table (DET) is built from the DET with all records having a file ID of 'SA'. Only the file start position, data element length, and data element mnemonic are used.		WAQC112	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 1-25-77 Page: 1 of 1
Diagram No.: 2.6.2.3.3 Description: Edit Processing Options

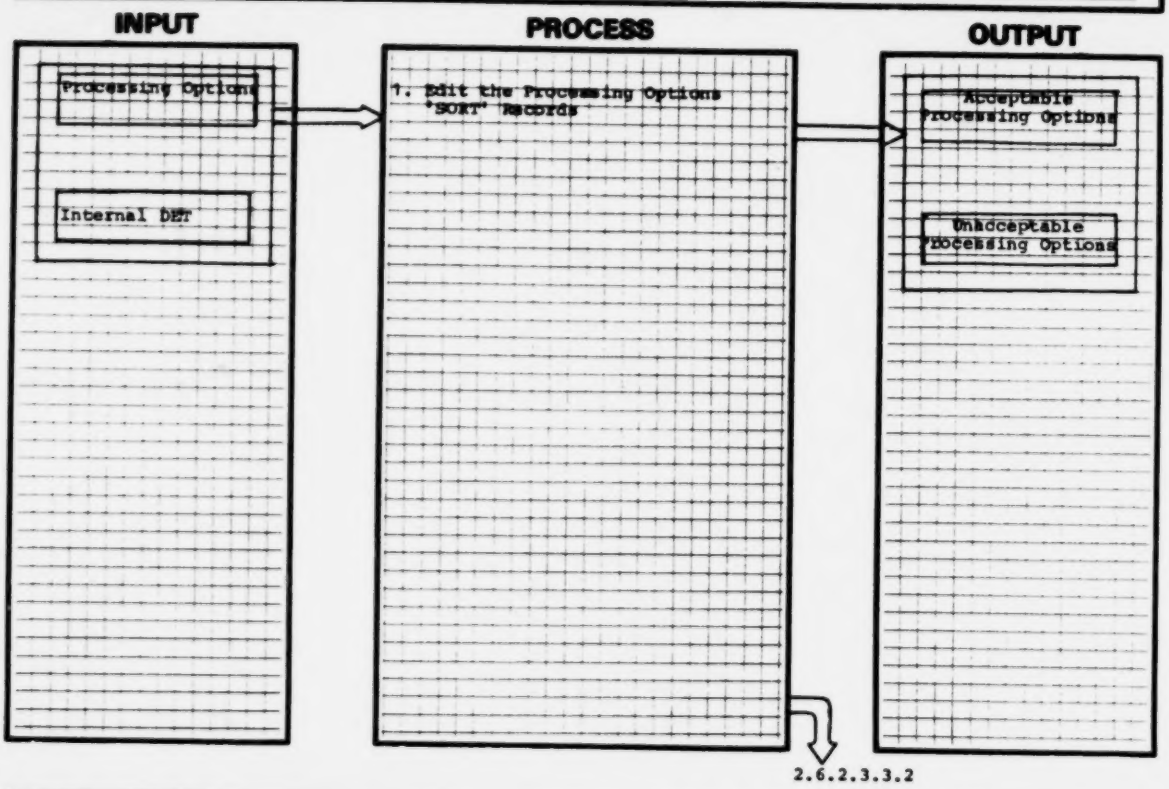


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing options record with 'SORT' in positions 1-4.	2.6.2.3.3.1	WAQC112	
2	Edit for Processing Options other than 'SORT'. If found, it is an error.	2.6.2.3.3.2	WAQC112	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-25-77 **Page:** 1 of 1

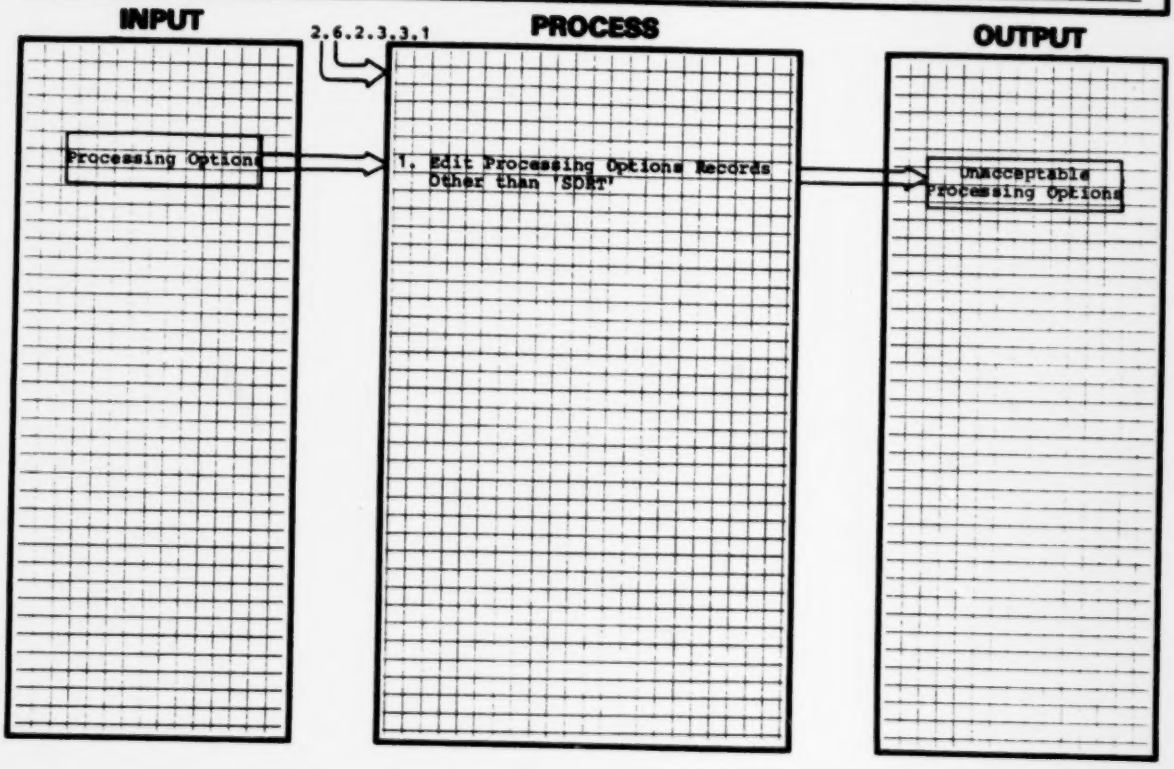
Diagram No.: 2.6.2.3.3.1 **Description:** Edit the Processing Options 'SORT' Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with "SORT" in positions 1-4 of the records as follows: a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" (ascending) or "D" (descending). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC112	104 212 MSIS. 301

MODEL STATE INFORMATION SYSTEM

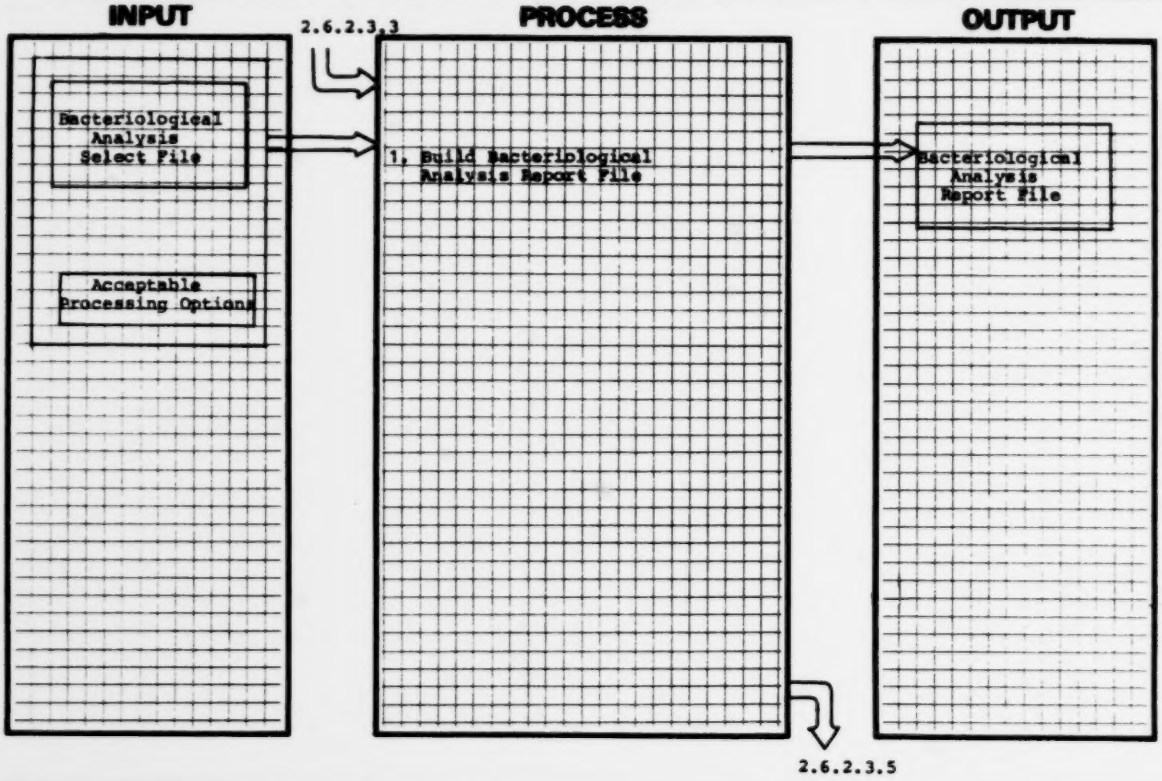
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-25-77 **Page:** 1 of 1
Diagram No.: 2.6.2.3.3.2 **Description:** Edit the Processing Options Other Than 'SORT'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR-RECORD TYPE NOT SORT' is moved to the error message area and processing terminates. NOTE: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.		WAQC112	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-25-77 Page: 1 of 3
Diagram No.: 2.6.2.3.4 Description: Build Bacteriological Analysis Report File

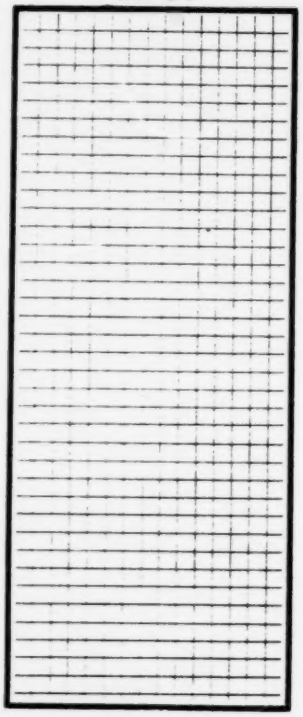


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Bacteriological Analysis Select File based on the criteria on the "SORT" Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Bacteriological Analysis Select File record as an array of one character values. b. Match the SAFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Bacteriological Analysis Select File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Bacteriological Analysis Select File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		WAQC112	228 235

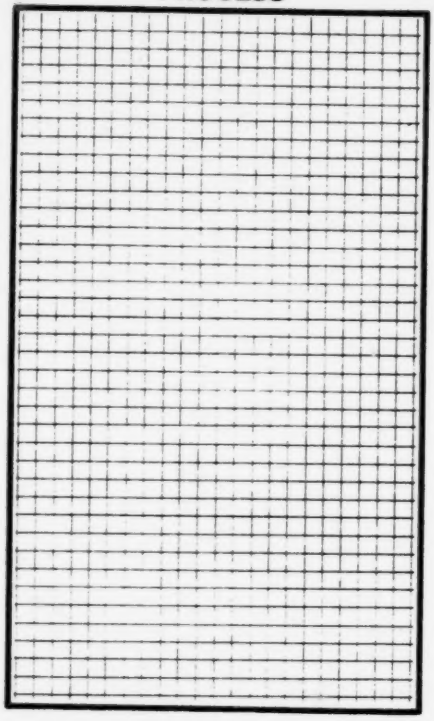
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-25-77 Page: 2 of 3
Diagram No.: 2.6.2.3.4 Description: Build Bacteriological Analysis Report File

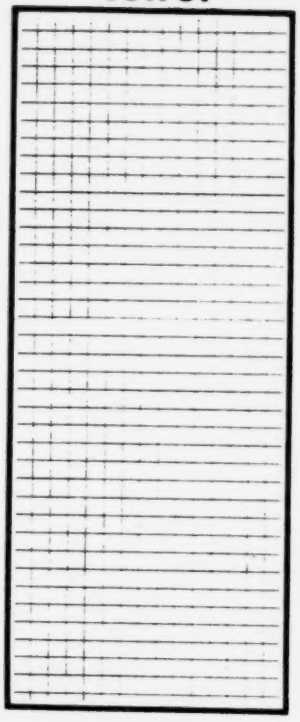
INPUT



PROCESS



OUTPUT

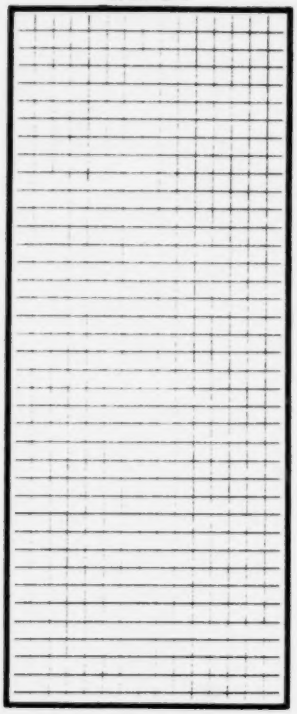


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the Det-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows: (a) If the SAFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the SAFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the SAFI-SORT-MODE = "A" (ascending) move the value obtained in c. to the proper location in the sort key. If the SAFI-SORT-MODE ="D" (descending) redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the SAFI-SORT-SEQUENCE.			

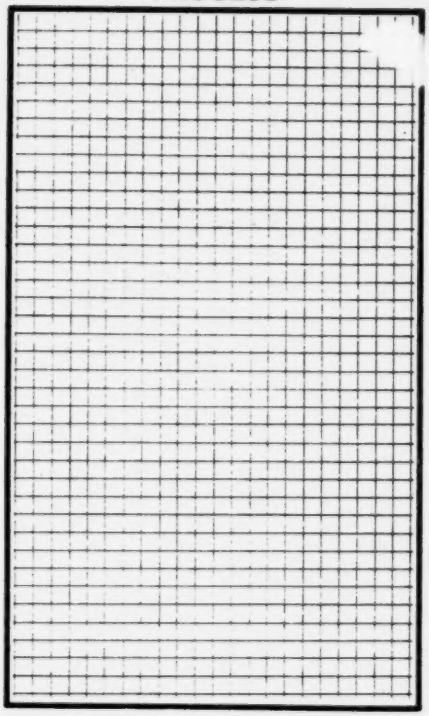
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-25-77 **Page:** 3 of 3
Diagram No.: 2.6.2.3.4 **Description:** Build Bacteriological Analysis Report File

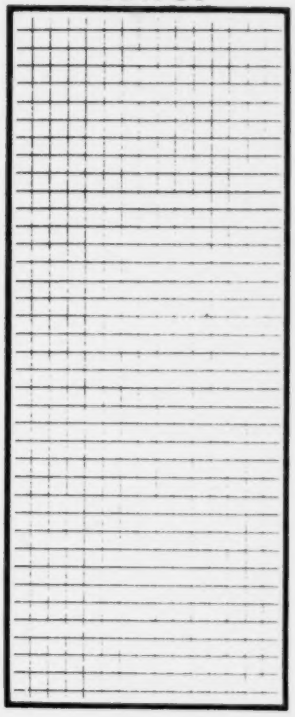
INPUT



PROCESS



OUTPUT

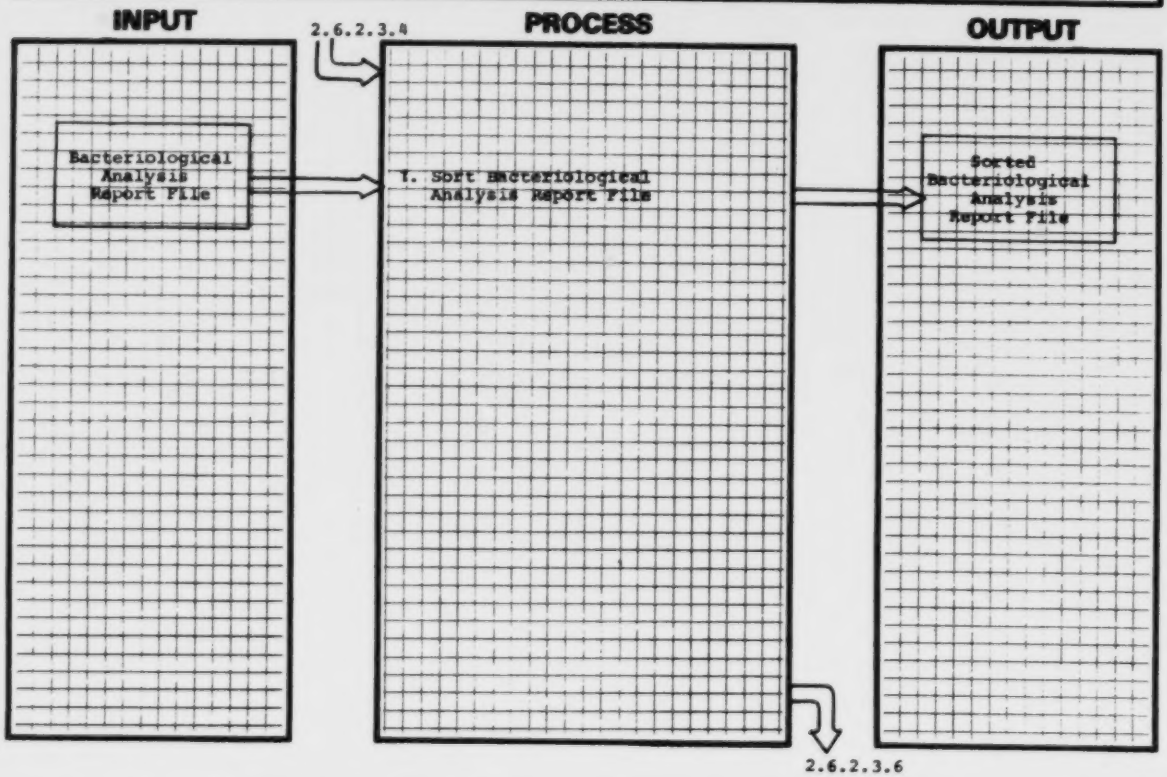


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	NOTE: If there are no 'SORT' Processing Options records, build a sort key in the sequence of Region, District, PWS-ID, and Contaminant-ID for each record on the file. NOTE: The first record of the Bacteriological Analysis Select File is a header record containing information to be used in the report header and is not to be used when building a sort key or written to the Bacteriological Analysis Report File.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-25-77 Page: 1 of 1

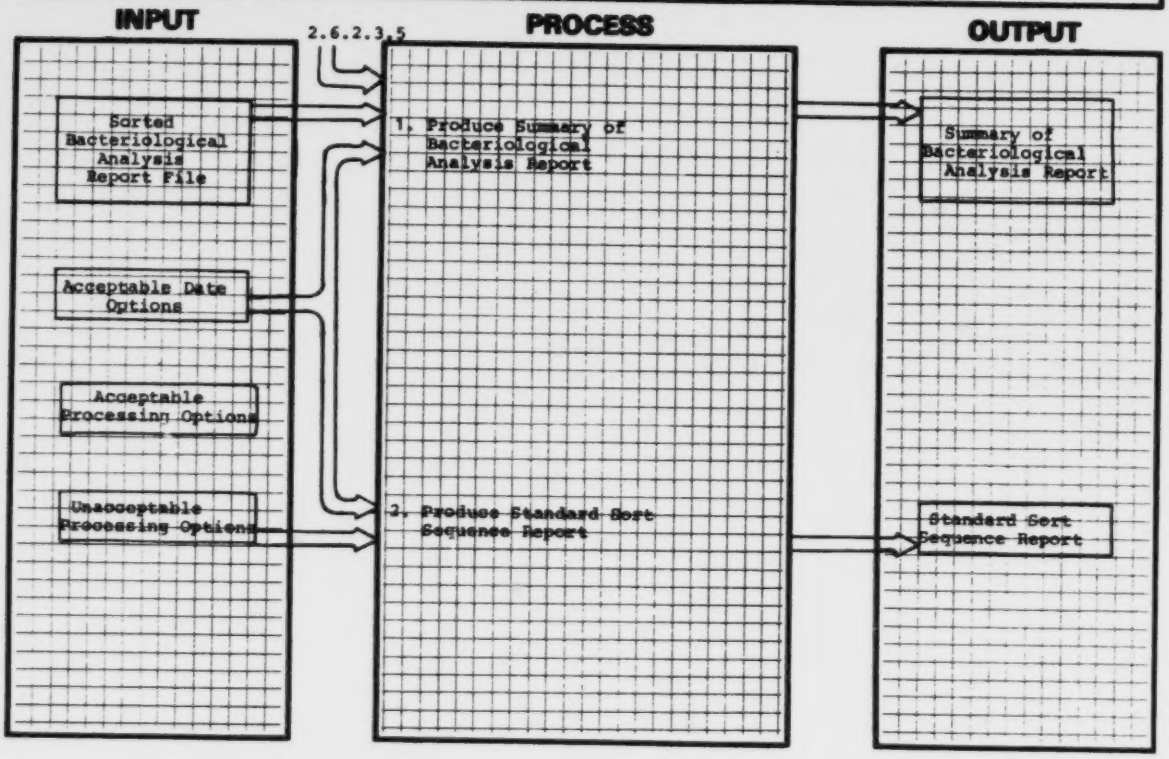
Diagram No.: 2.6.2.3.5 Description: Sort Bacteriological Analysis Report File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Bacteriological Analysis Report File in ascending sequence according to the thirty position sort key.		WAQC112	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-25-77 **Page:** 1 **of** 3
Diagram No.: 2.6.2.3.6 **Description:** Produce Reports



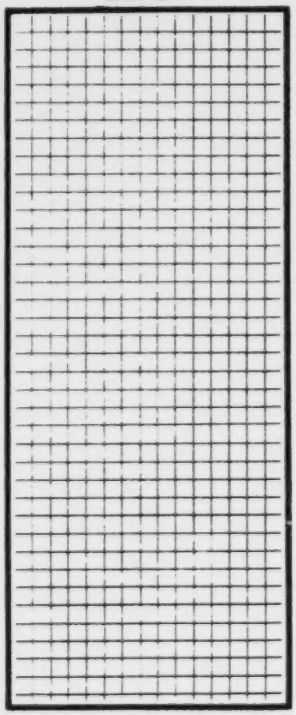
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Summary of Bacteriological Analysis Report from data on the Sorted Bacteriological Analysis Report File. The result fields are converted from absolute values to decimal values using the value in the decimal indicator for the field. For example: If SAFI-R-MCL-VIOLATED is 12345 and SAFI-R-MCL-VIOLATED-DECIMALS is 2 then the field on the report will be 123.45. To get the dates for the report, use the to and from dates and the report date from the header record (see HIPO 2.6.2.3.1) Bacteriological Analysis Select File. Postion 25 of this header record is not used. Summaries by Contaminant are not produced unless PWS-ID is followed by Contaminant-ID on the 'SORT' Processing Options records. When Contaminant summaries are produced, they will appear on the report in the following order by sample type: C - Check sample summary D - Regular distribution sample summary P - Plant tap sample summary R - Raw water sample summary S - Special sample summary		WAQC112	228 323

MODEL STATE INFORMATION SYSTEM

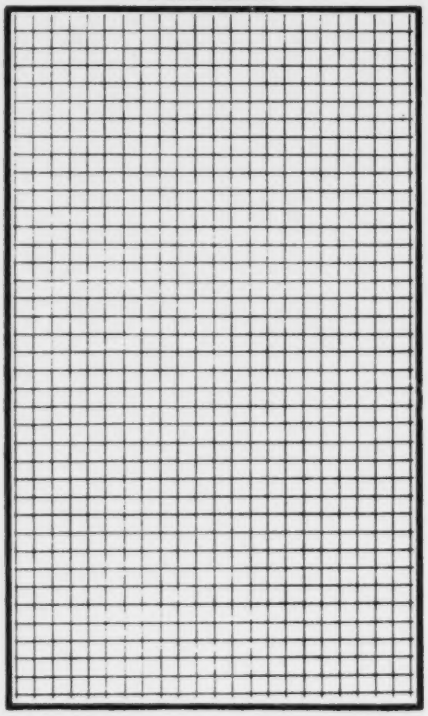
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-25-77 Page: 2 of 3

Diagram No.: 2.6.2.3.6 Description: Produce Reports

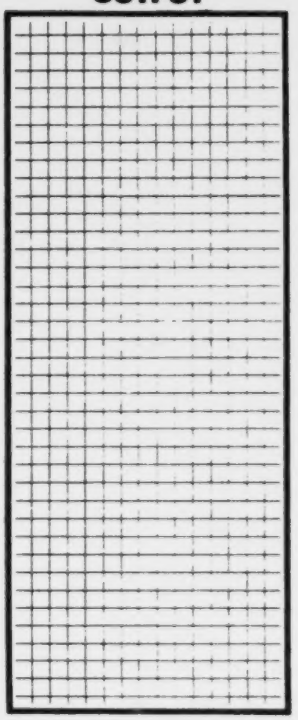
INPUT



PROCESS



OUTPUT

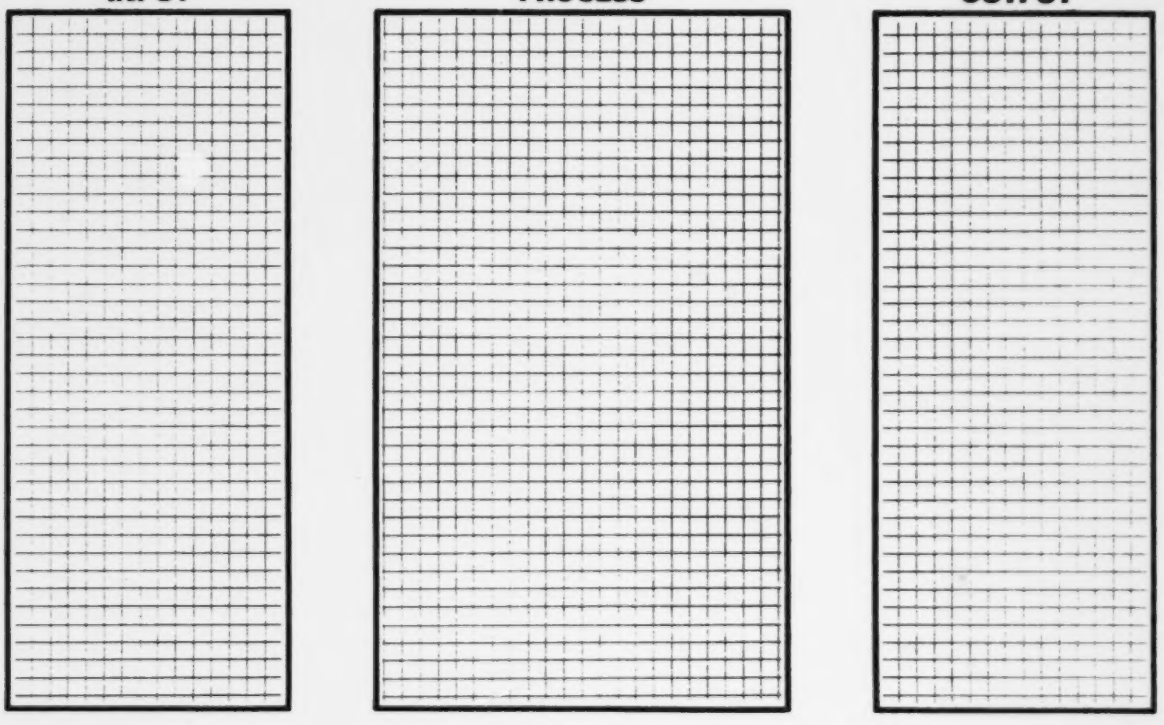


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The Low Analysis Result for the summary is the lowest average result within the group being summarized. The High Analysis Result for the summary is the highest average result within the group being summarized. The Average Analysis Result is obtained by adding all analysis results of the details being summarized and dividing by the number in the group if only details are in the group. If there are summary records in the group, each summary record enters into the computation of Average Analysis Result by using N x (Summary Average Analysis Result) in the running sum and including N in the total number in the group. N is the number of samples actually taken in the summary record. Summaries by Region are not produced unless Region is either a level '01' or level '02' (with District as level '01') sort sequence on the 'SORT' Processing Options record. Summaries by District are not produced usless District is either a level '01' or level '02' (with Region as level '01') sort sequence on the 'SORT' Processing Options records. The summary by State is always produced on the last page of the reports.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-25-77 Page: 3 of 3
Diagram No.: 2.6.2.3.6 Description: Produce Reports

INPUT | PROCESS | OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	To obtain the report described in WAQC.323 (Summary of Bacteriological Analysis Report), the 'SORT' Processing Options should be as follows: Sort Sequence — Mnemonic Name 01 — SA-REGION 02 — SA-DISTRIC 03 — SA-PWS-ID 04 — SA-CONID When producing the report, do the following: a. Convert all Julian dates (DDDYY) to Calendar format (MM/DD/YY) b. Use 'YES' or 'NO' for Violation (State and Federal) fields on detail lines. Use the number of State and Federal Violations on sample summary and contaminant summary lines. c. Use the field "number of samples taken" for the "number samples" on detail, sample summary, and contaminant summary lines. NOTE: If a group of records contains either no detail or summary records (all one record type), the heading on the report for the missing type is not printed.			
2	Produce the Standard Sort Sequence Report. If any Processing Options error messages are printed, the Processing Option record image and all associated error messages are printed, otherwise produce the report of the sort sequence.		WAQC112	MSIS. 309 MSIS. 311

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC113
DATE: February 21, 1977

I. OBJECTIVES:

The objective of this program is to produce the summary of Turbidity Analysis Report sorted in a user-defined sequence using data from the Turbidity Analysis Select File.

II INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Turbidity Analysis Select File	SAFI-HEDR-REPT-RECORD SAFI-S-REPT-RECORD	WAQC.228 WAQC.235
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Record:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Sort Processing Options	VIFI-SORT-RECORD	WAQC.104	WAQC.212

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Summary of Turbidity Analysis Report	WAQC.328
2.	Standard Sort Sequence Report	MSIS.309 MSIS.311

C. Turnaround Documents:

Not Applicable

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IV. FUNCTIONS:

1. Verify the date on the header record of the Turbidity Analysis Select File. If the date is '000000', processing will terminate.

2. Build an Internal Data Element Table (DET) from the DET.

3. Edit the SORT Processing Options for errors. The'SORT' record is edited for syntax errors in sequence, mnemonic name and sort mode. Any error will cause processing to terminate and error messages to be written on the Standard Sort Sequence Report.

4. Build the Turbidity Analysis Report File by constructing sort keys using the 'SORT' Processing Options and the Turbidity Analysis Select File. If there are no 'SORT' Processing Options, the sort key is built sequentially using a record count that agrees with the number of records on the Turbidity Analysis Select File.

5. Sort the Turbidity Analysis Report File from Step 4 into the sequence specified by the 'SORT' Processing Options or the sequentially created sort key.

6. Produce the Summary of Turbidity Analysis Report and the Standard Sort Sequence Report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Sort Processing Options.

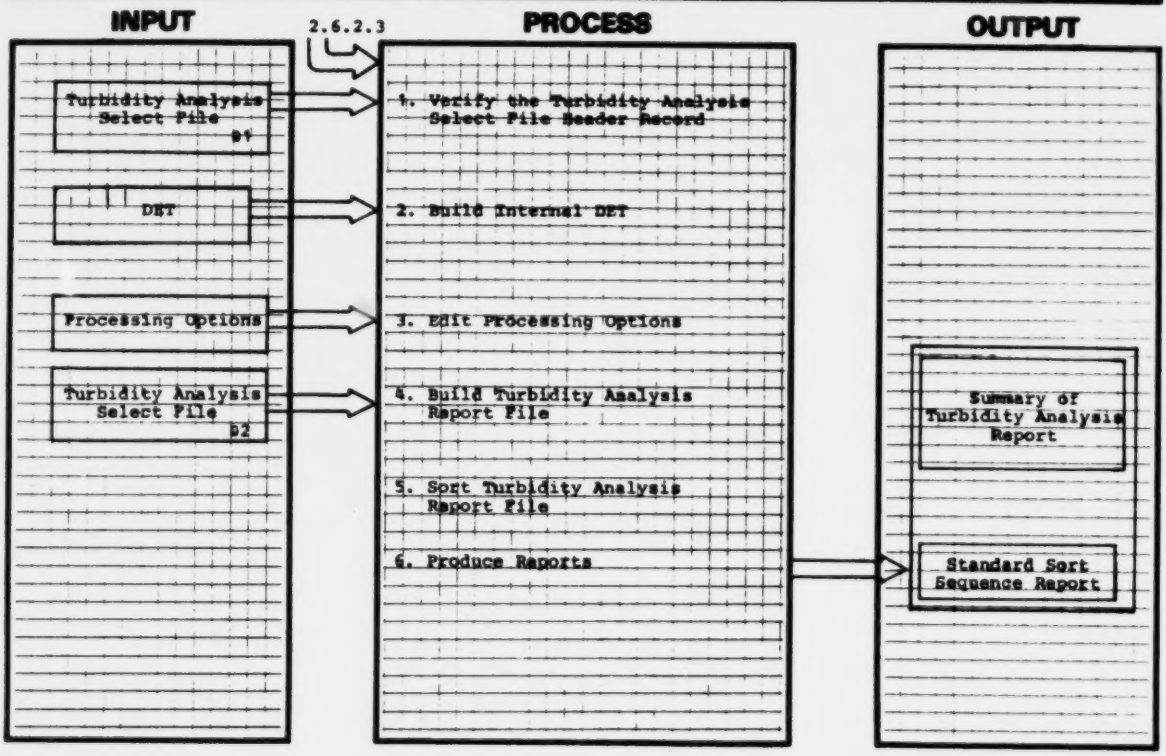
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 2-21-77 Page: 1 of 1

Diagram No.: 2.6.2.4 Description: Produce Summary of Turbidity Analysis Report

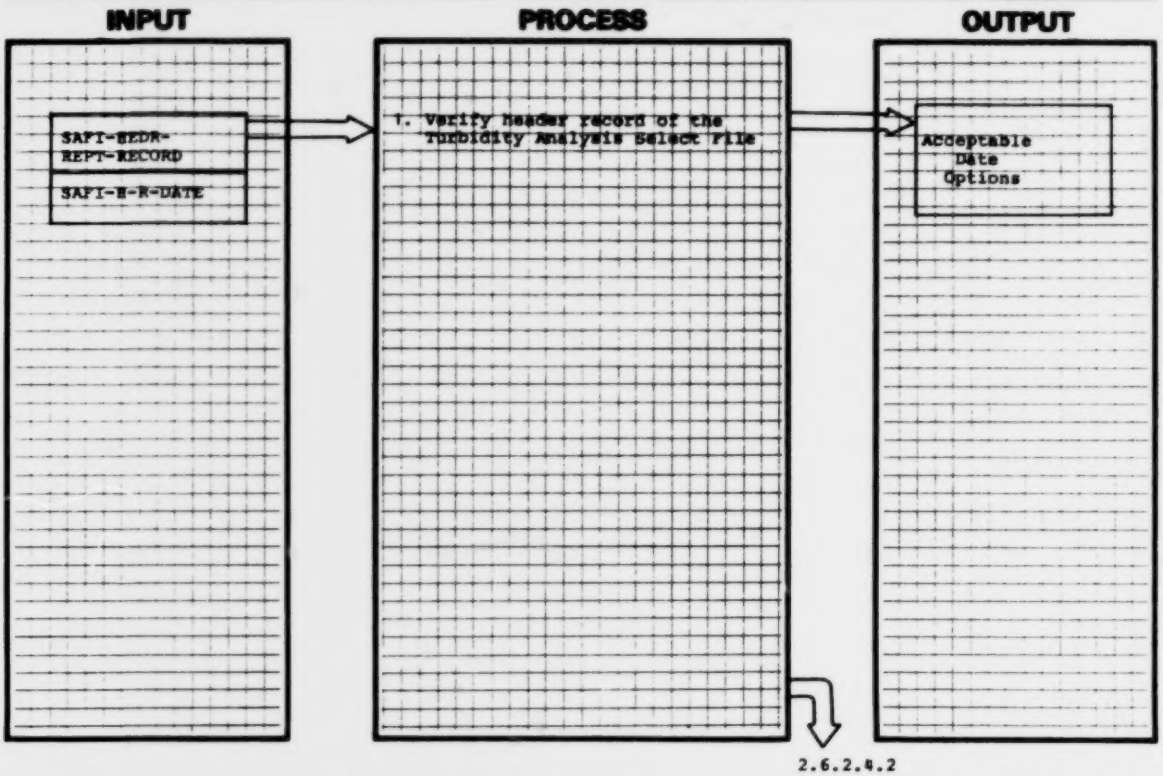


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the Turbidity Analysis Select File Header Record to ensure that processing is to continue.	2.6.2.4.1	WAQC113	
2	Build an Internal Data Element Table (DET) from the DET.	2.6.2.4.2	WAQC113	
3	Edit the 'SORT' Processing Options. If any Processing Options are in error, processing terminates.	2.6.2.4.3	WAQC113	
4	Build the Turbidity Analysis Report File from the Turbidity Analysis Select File by the addition of a 30 position sort key on the front of each record with the sort key contents determined by the 'SORT' Processing Options edited in Step 3.	2.6.2.4.4	WAQC113	
5	Sort the Turbidity Analysis Report File by the user-defined sequence specified by the Sort Processing Options.	2.6.2.4.5	WAQC113	
6	Produce the Summary of Turbidity Analysis Report by printing data from the Sorted Turbidity Analysis Report File. Produce the Standard Sort Sequence Report which will contain either the Sort Sequence Report or the Processing Options errors.	2.6.2.4.6	WAQC113	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2-21-77 Page: 1 of 1

Diagram No.: 2.6.2.4.1 Description: Verify the Turbidity Analysis Select File Header Record

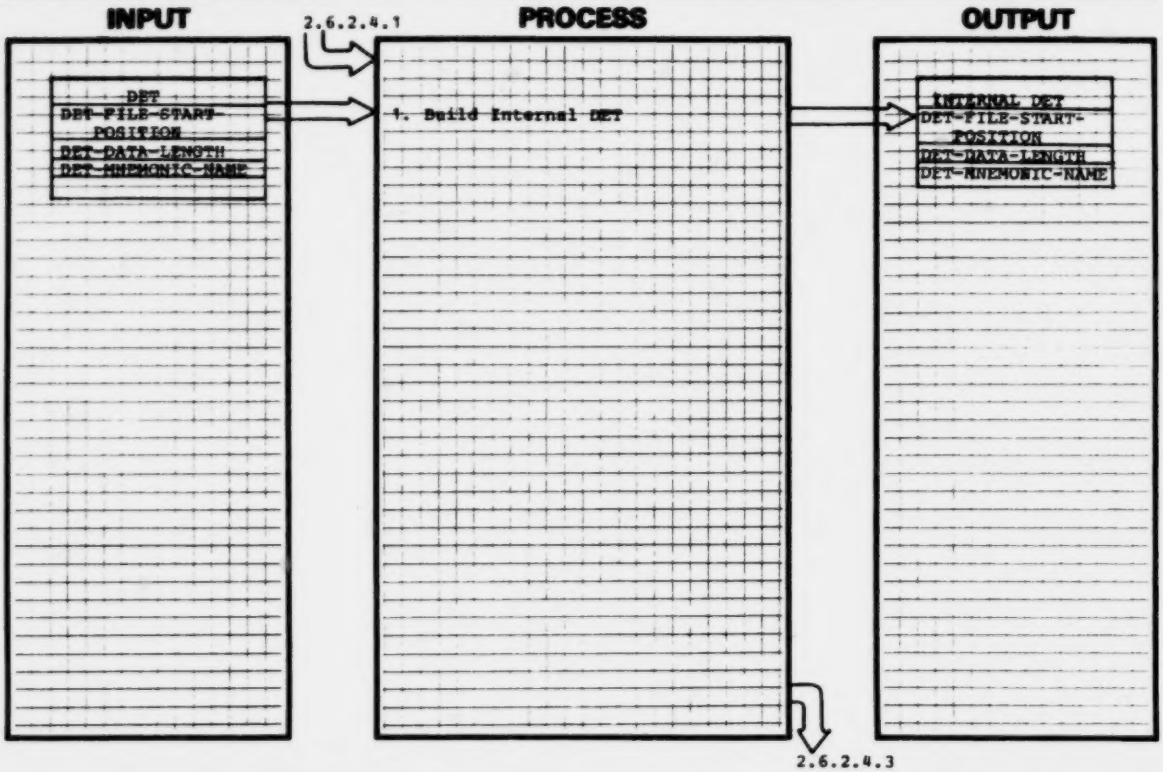


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Turbidity Analysis Select File is written during execution of program WAQC100 and carries information from the 'PROC' record processed by that program. If, for some reason, WAQC100 terminates abnormally, the field SAFI-H-R-DATE will contain '000000' signifying that this program is also to terminate without report production. To ensure that the first record is indeed the expected header, positions 1-4 of the record are edited for 'LOW VALUES'.		WAQC113	228

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2-21-77 Page: 1 of 1

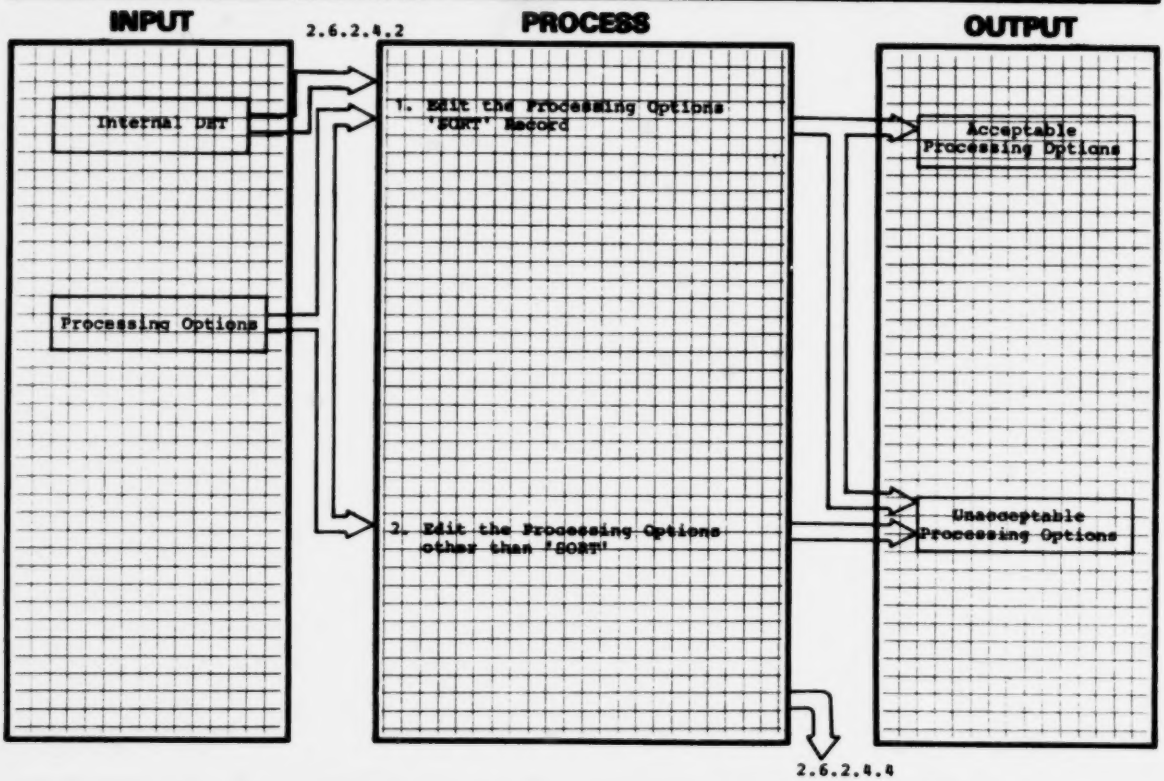
Diagram No.: 2.6.2.4.2 Description: Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of 'SA'. Only the file start position, data element length, and data element mnemonic are used.		WAQC113	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2-21-77 **Page:** 1 of 1
Diagram No.: 2.6.2.4.3 **Description:** Edit Processing Options

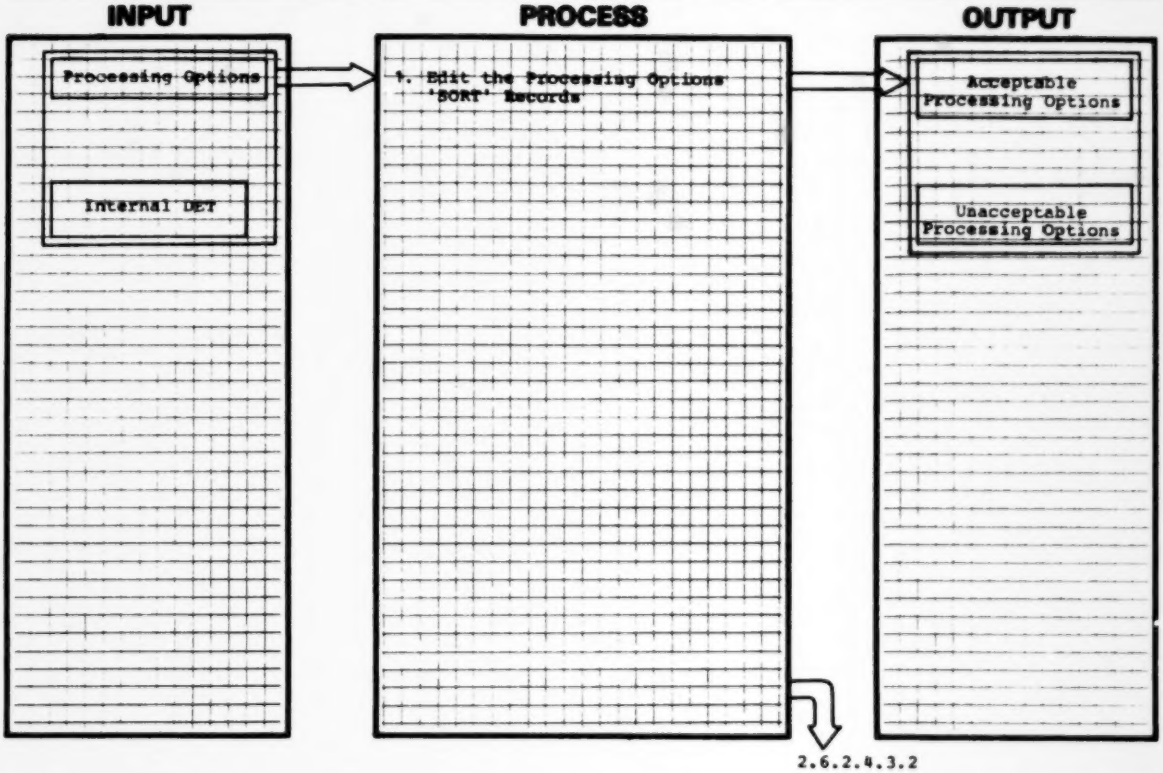


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'SORT' in positions 1-4.	2.6.2.4.3.1	WAQC113	
2	Edit for Processing Options other than 'SORT'. If found, it is an error.	2.6.2.4.3.2	WAQC113	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-21-77 **Page:** 1 of 1

Diagram No.: 2.6.2.4.3.1 **Description:** Edit the Processing Options 'SORT' Records

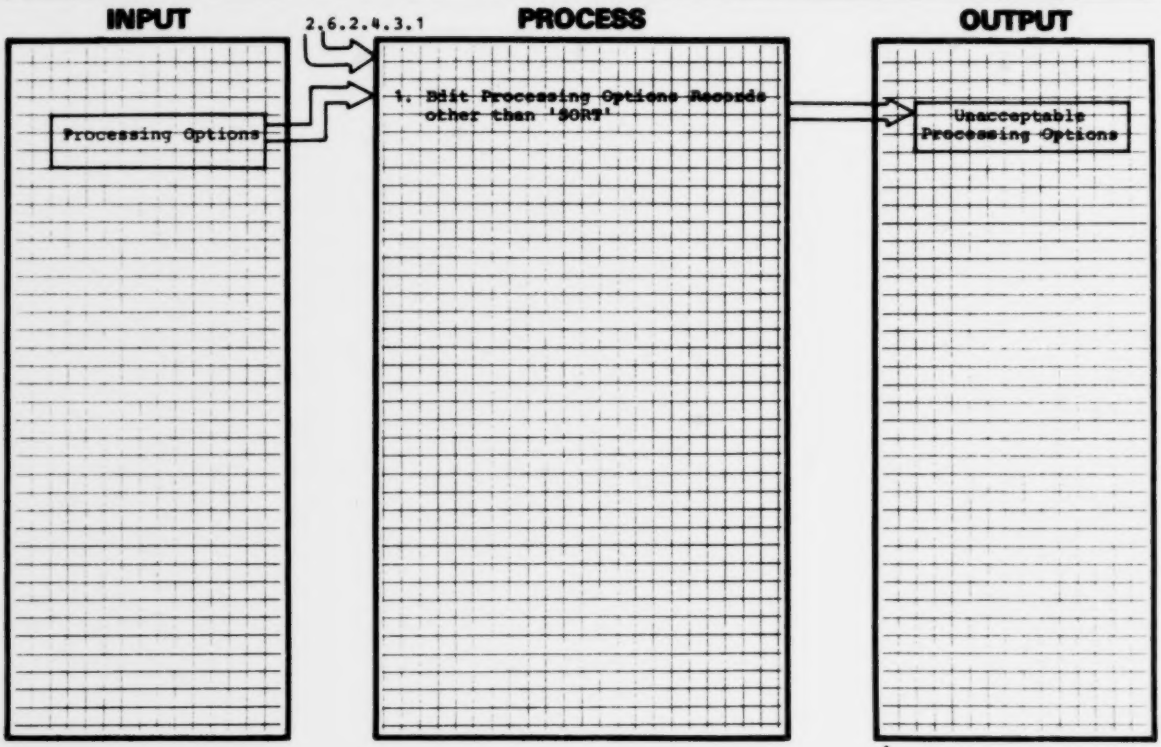


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with "SORT" in positions 1-4 of the records as follows. a. VIFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VIFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VIFI-SORT-MNEMONIC and VIFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VIFI-SORT-MNEMONIC determines tha data elements to be used in building the sort key. If the VIFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VIFI-SORT-MNEMONIC is non-blank, then VIFI-SORT-MNEMONIC must be present. c. VIFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' (ascending) or 'D' (descending). If VIFI-SORT-SEQUENCE is non-blank, then VIFI-SORT-MODE must be present. As each VIFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated.		WAQC113	104 212 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2-21-77 Page: 1 of 1

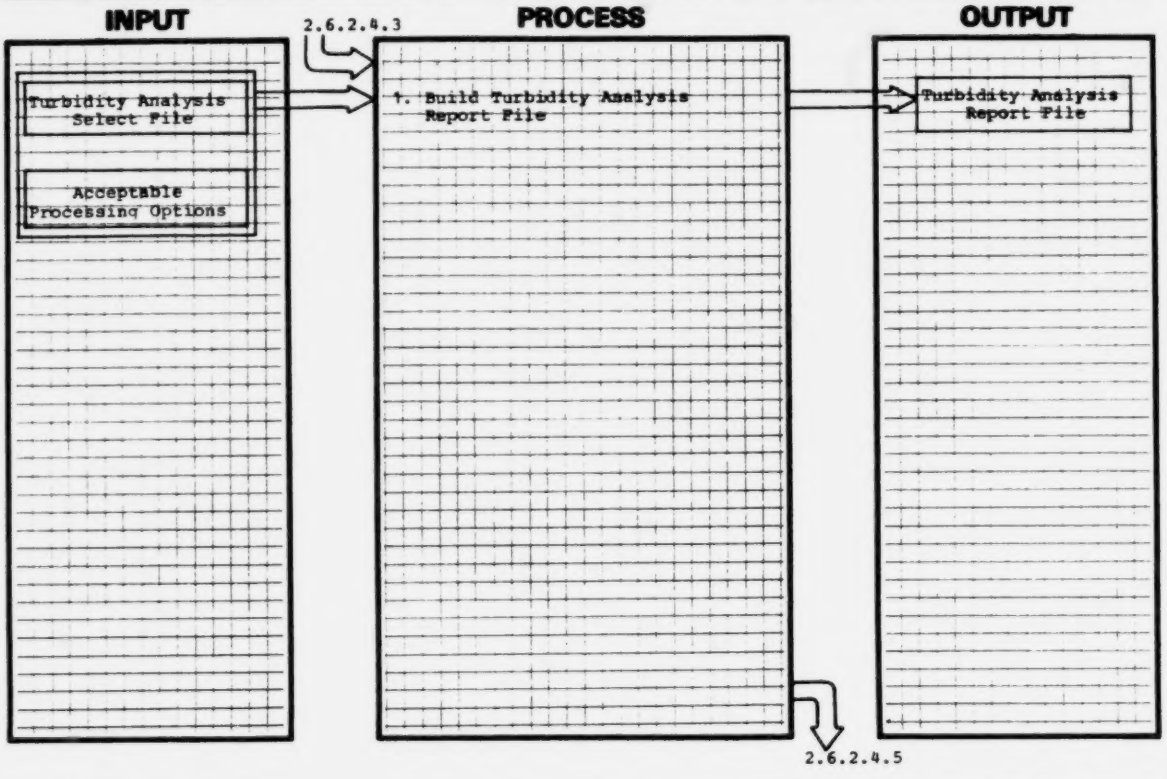
Diagram No.: 2.6.2.4.3.2 Description: Edit the Processing Options Other Than 'SORT'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record(s) for other than 'SORT' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT SORT' is moved to the error message area and processing terminates. NOTE: If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Standard Sort Sequence Report.		WAQC113	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-21-77 **Page:** 1 **of** 3
Diagram No.: 2.6.2.4.4 **Description:** Build Turbidity Analysis Report File

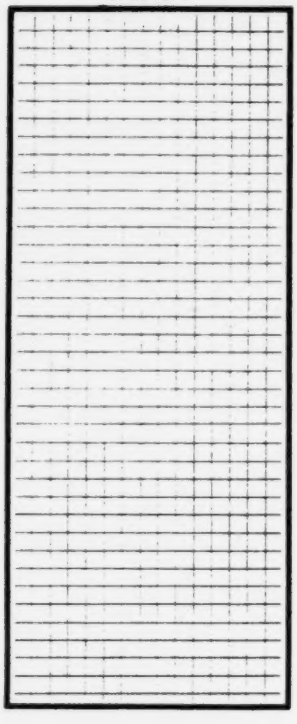


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Turbidity Analysis Select File based on the criteria on the "SORT" Options records as follows: a. Redefine the entire (or if array: nonvariable portion of the) Turbidity Analysis Select File record as an array of one character values. b. Match the SAFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the Turbidity Analysis Select File. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the Turbidity Analysis Select File. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 00123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		WAQC113	228 235

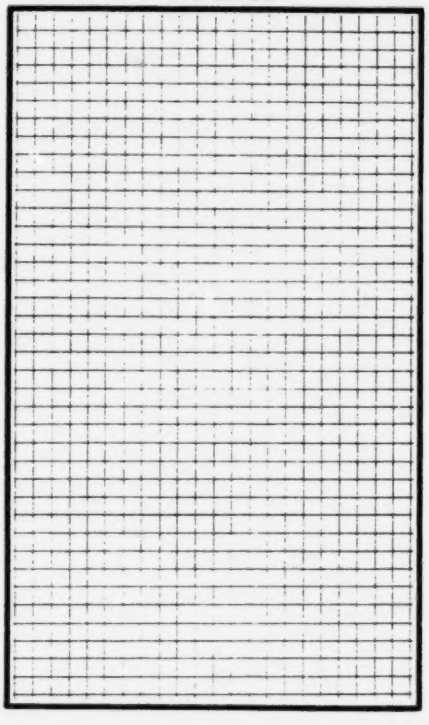
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-21-77 **Page:** 2 **of** 3
Diagram No.: 2.6.2.4.4 **Description:** Build Turbidity Analysis Report File

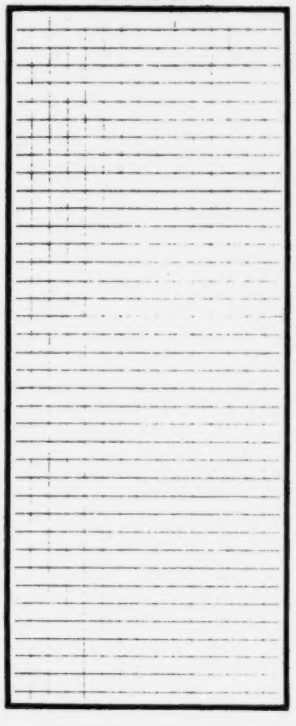
INPUT



PROCESS



OUTPUT



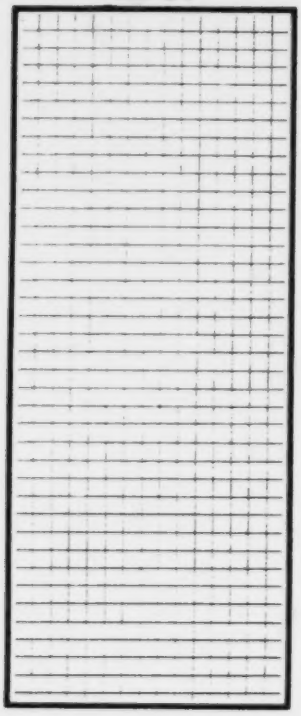
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the Det-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows: (a) If the SAFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the SAFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the SAFI-SORT-MODE = "A" (ascending) move the value obtained in c. to the proper location in the sort key. If the SAFI-SORT-MODE ="D" (descending) redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in the field and move the result into the proper location in the sort key. The proper location is determined by the SAFI-SORT-SEQUENCE.			

MODEL STATE INFORMATION SYSTEM

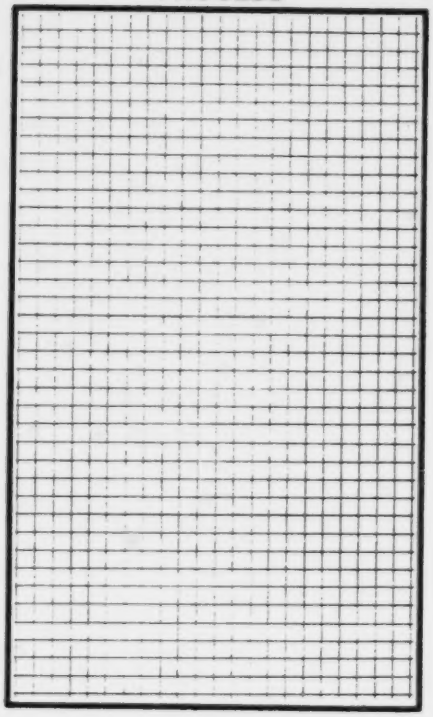
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2-21-77 Page: 3 of 3

Diagram No.: 2.6.2.4.4 Description: Build Turbidity Analysis Report File

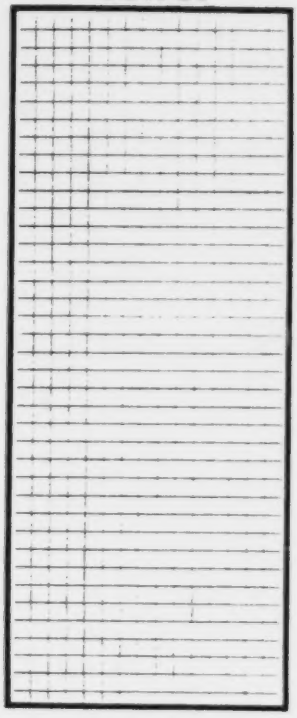
INPUT



PROCESS



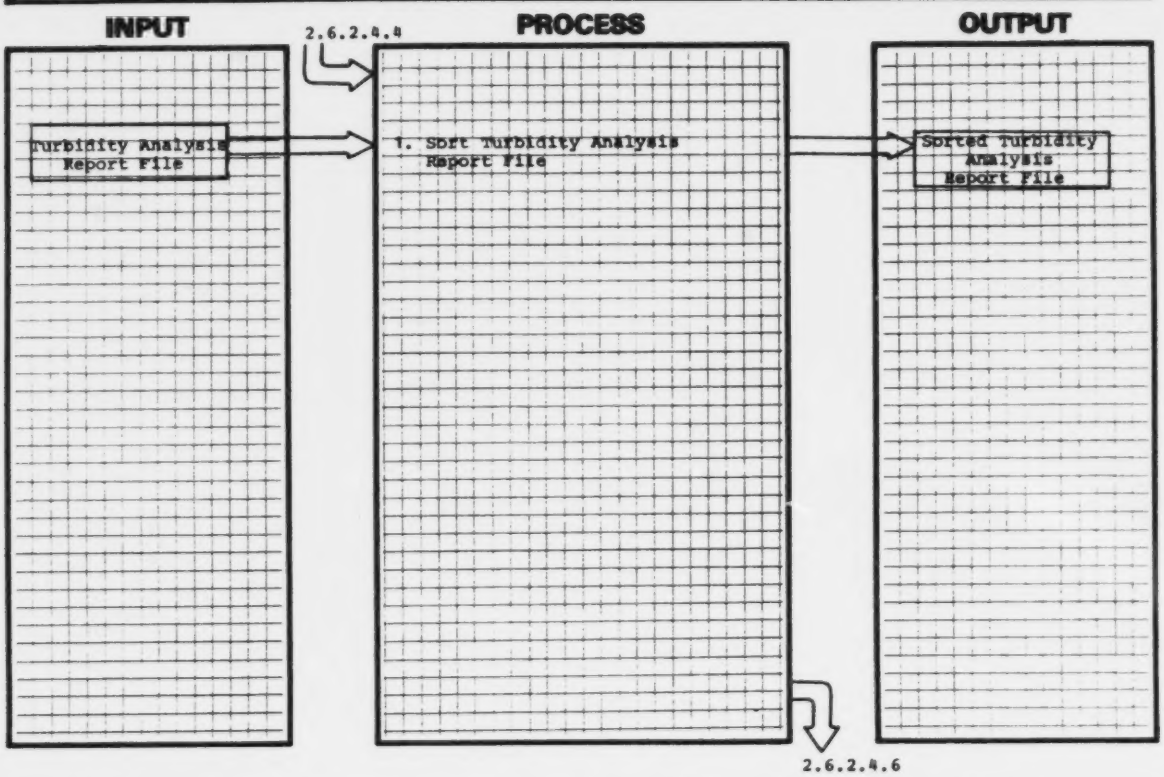
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	NOTE: If there are no 'SORT' Processing Options records, build a sort key in the sequence of Region, District, PWS-ID, and Contaminant-ID for each record on the file. The first record of the Turbidity Analysis Select File is a header record containing information to be used in the report header and is not to be used when building a sort key or written to the Turbidity Analysis Report File.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2-21-77 Page: 1 of 1
Diagram No.: 2.6.2.4.5 Description: Sort Report File

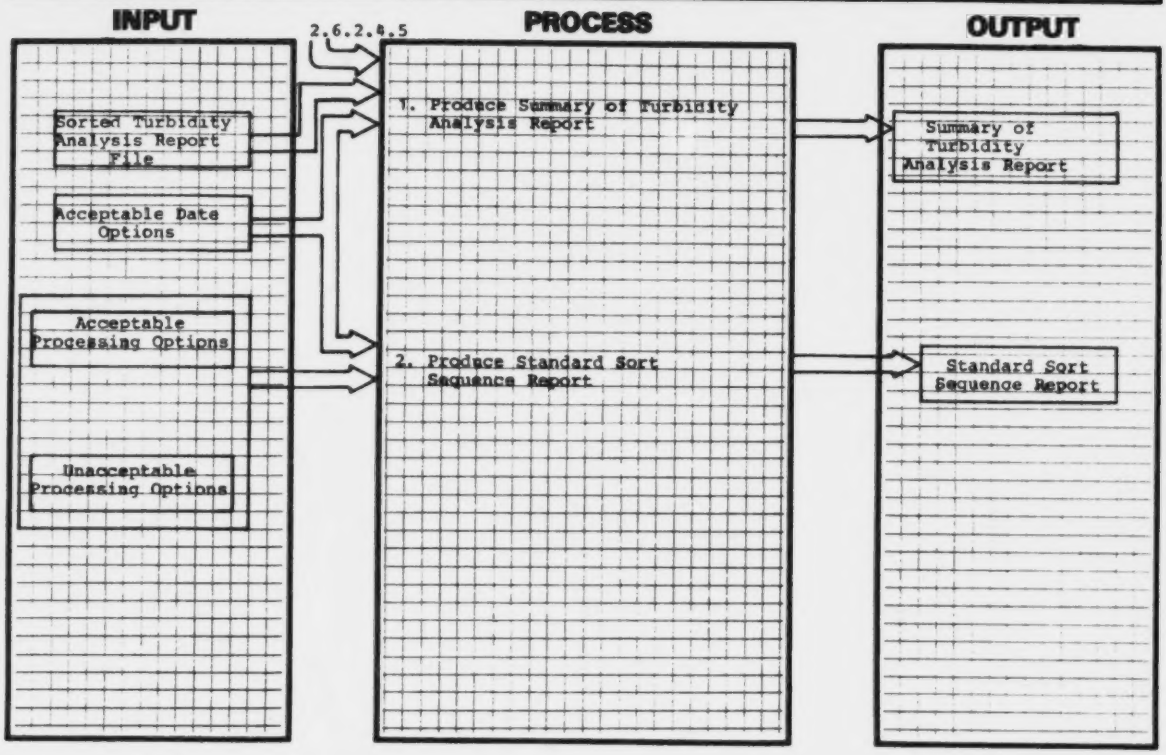


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Turbidity Analysis Report File in ascending sequence according to the thirty position sort key.		WAQC113	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-25-77 **Page:** 1 of 3

Diagram No.: 2.6.2.4.6 **Description:** Produce Reports



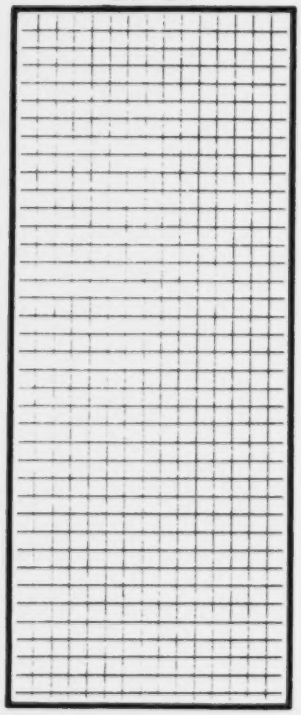
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Summary of Turbidity Analysis Report from data on the Sorted Turbidity Analysis Report file. The result fields are converted from absolute values to decimals values using the value in the decimal indicator for the field. For example: If SAFI-R-MCL-VIOLATED is 12345 and SAFI-R-MCL-VIOLATED-DECIMALS is 2 then the field on the report will be 123.45. To get the dates for the report, use the to and from dates and the report date from the header record (see HIPO 2.6.2.4.1) of the Turbidity Analysis Select File. Position 25 of this header record is not used. Summaries by Contaminant are not produced unless PWS-ID is followed by Contaminant-ID on the 'SORT' Processing Options records. When contaminant summaries are produced, they will appear on the report in the following order by sample type: C - Check sample summary D - Regular distribution sample summary P - Plant tap sample summary R - Raw water sample summary S - Special sample summary The Low Analysis Result for the summary is the lowest average result within the group being summarized. The High Analysis Result for the summary is the highest average result within the group being summerized. The Average Analysis Result is obtained by adding all analysis results of the details being summarized and dividing by the number in the group if only details are in the group.		WAQC113	228 324

MODEL STATE INFORMATION SYSTEM

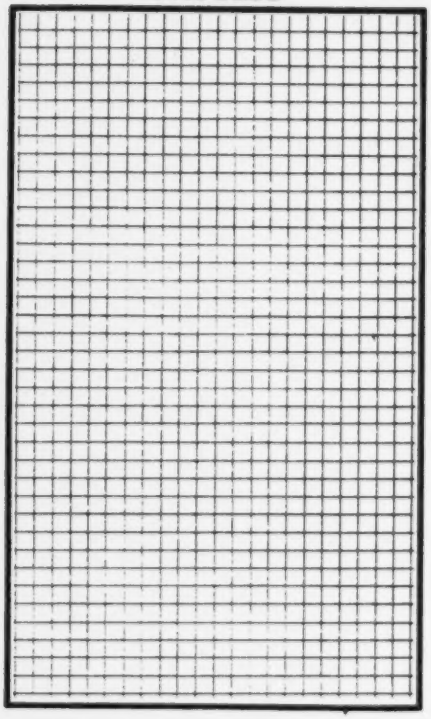
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 2-21-77 Page: 2 of 3

Diagram No.: 2,6,2,4,6 Description: Produce Reports

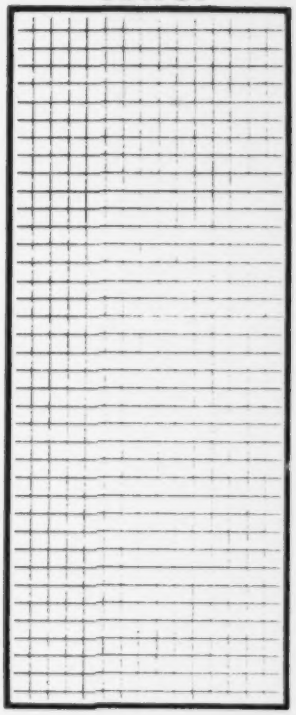
INPUT



PROCESS



OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER

If there are summary records in the group, each summary record enters into the Computation of Average Analysis Result by using Nx(Summary Average Analysis Result) in the running sum and including N in the total number in the group. N is the number of samples in the summary record.

Summaries by Region are not produced unless Region is either a level '01' or level '02 (with District as level '01') sort sequence on the 'SORT' Processing Options records.

Summaries by District are not produced unless District is either a level '01' or level '02' (with Region as level '01') sort sequence on the 'SORT' Processing Options records.

The summary by State is always produced on the last page of the reports.

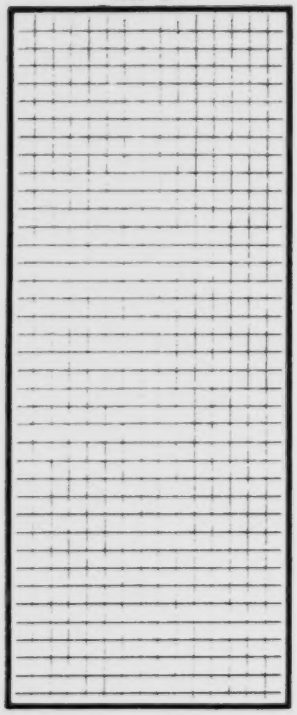
To obtain the report described in WAQC.324 (Summary of Turbidity Analysis Report), the 'SORT' Processing Options should be as follows:

Sort Sequence	Mnemonic Name
01	SA-REGION
02	SA-DISTRIC
03	SA-PWS-ID
04	SA-CONID

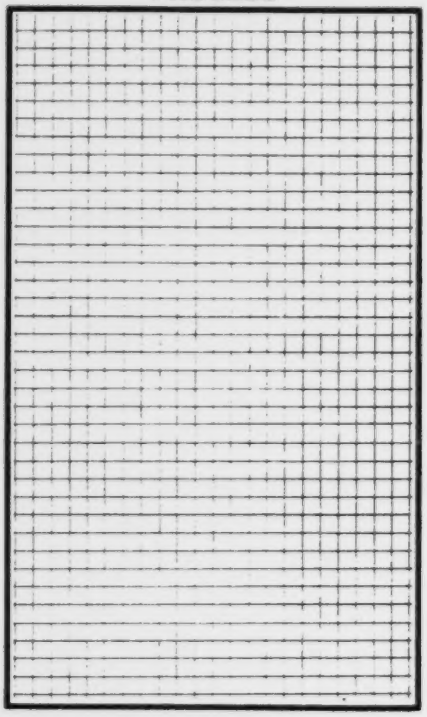
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-21-77 **Page:** 3 **of** 3
Diagram No.: 2.6.2.4.6 **Description:** Produce Reports

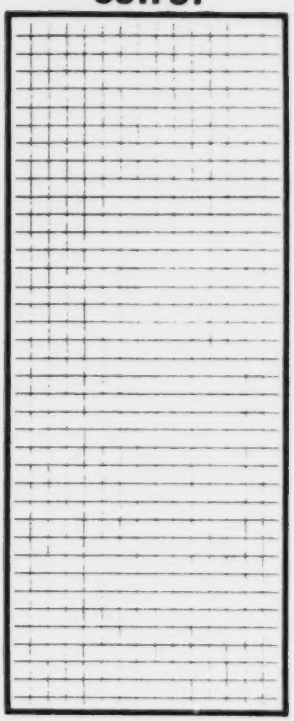
INPUT



PROCESS



OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	When producing the report, do the following: a. Convert all Julian dates (DDDYY) to Calendar format (MM/DD/YY). b. Use 'YES' or 'NO' for Violation (State and Federal) fields on detail lines. Use the number of State and Federal Violations on sample summary and contaminant summary lines. c. Use the field "number of samples taken" for the "number samples" on detail, sample summary, and contaminant summary lines. NOTE: If a group of records contains either no detail or summary records (all one record type), the heading on the report for the missing type is not printed.			
2	Produce the Standard Sort Sequence Report. If any Processing Options error messages are printed, the Processing Options record image and all associated error messages are printed, otherwise produce the report of the sort sequence.		NAQC113	MSIS. 309 MSIS. 311

Water Quality Compliance Subsystem 2
Update VIF .7
Edit Processing Options .1
Build Internal CVT .2
Edit VIF Input Transactions .3
Update VIF .4
Produce Standard Update Statistics Report .5
Update VIF Record .1
Verify Updated VIF Record .2
Build New VIF Records .3
Update VIF .4
LEGEND
Data Flow
Entries and Exits
a
Multiple I/O Reference
VISUAL TABLE OF CONTENTS
2 Water Quality Compliance Subsystem
2.7 Update Violations File (VIF)
2.7.1 Edit Processing Options
2.7.2 Build Internal Code Value Table (CVT)
2.7.3 Edit Violations File (VIF) Input Transactions
2.7.4 Update Violations File (VIF)
2.7.4.1 Update Violations File (VIF) Record
2.7.4.2 Verify Updated Violations File (VIF) Record
2.7.4.3 Build New Violations File (VIF) Records
2.7.4.4 Update Violations File (VIF)
2.7.5 Produce Standard Update Statistics Report

Diagram Type: VTOC

Diagram Number: 2.7

Subsystem: Water Quality Compliance

Description: Update Violations File (VIF)

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC120
DATE: January 13, 1977

I. OBJECTIVES:

The objectives of this program are to edit the Input Transactions and to update the Violations File (VIF).

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Violations File	VIF-RFCORD		WAQC.255
2.	VIF Manual Input Transactions	VIFI-TR00-UPDT-RECORD	WAQC.119 WAQC.120	WAQC.223
		VIFI-TR01-UPDT-RECORD	WAQC.119	WAQC.224
		VIFI-TR02-UPDT-RECORD	WAQC.120	WAQC.225
3.	VIF Compliance Input Transactions	VIFI-TR00-UPDT-RECORD		WAQC.223
		VIFI-TR01-UPDT-RECORD		WAQC.224
		VIFI-TR02-UPDT-RECORD		WAQC.225
4.	Public Water Table	PWT-RECORD		PWSI.201
		PWT-HEADER-RECORD		PWSI.234
5.	Laboratory Table	LBT-RECORD		WAQC.250
		LBT-HDR-RECORD		WAQC.256
6.	Code Value Table	CVT-RECORD		MSIS.206

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	VIFI-PROC-UPDT-RECORD	WAQC.118	WAQC.222

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Violations File	VIF-RECORD	WAQC.255
2.	Standard History File	SHF-RECORD	MSIS.202
		MSI-PROC-SHF-RECORD	MSIS.200
3.	Standard Error File	SEF-RECORD	MSIS.207
		MSI-PROC-SEF-RECORD	MSIS.208

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Update Statistics Report	MSIS.300 MSIS.309
2.	Standard Warning Report	MSIS.310

C. Turnaround Documents:

Not applicable

IV. FUNCTIONS:

1. Edit the Processing Options records for errors. The 'PROC' record is edited for date errors and for invalid Standard Error Processing Options and Standard History Processing Options. Any errors will produce messages on the Standard Update Statistics Report and cause processing to terminate.

2. Build the Internal Code Value Table (CVT). This table will be used in editing input transactions.

3. Edit the Violations File (VIF) input transaction records for valid entries. Transactions in error are written to the Standard Error File (SEF).

4. Update the VIF from VIF input transactions originating from two sources; manual input transactions and input transactions generated from program WAQC038. All fields updated cause a Standard History File (SHF) record to be built. Transactions in error are written to the SEF. If any EPA required fields are missing, a warning message will be written on the Standard Warning Report.

5. Produce the Standard Update Statistics Report. If any Processing Options were in error, error messages will be printed on this report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

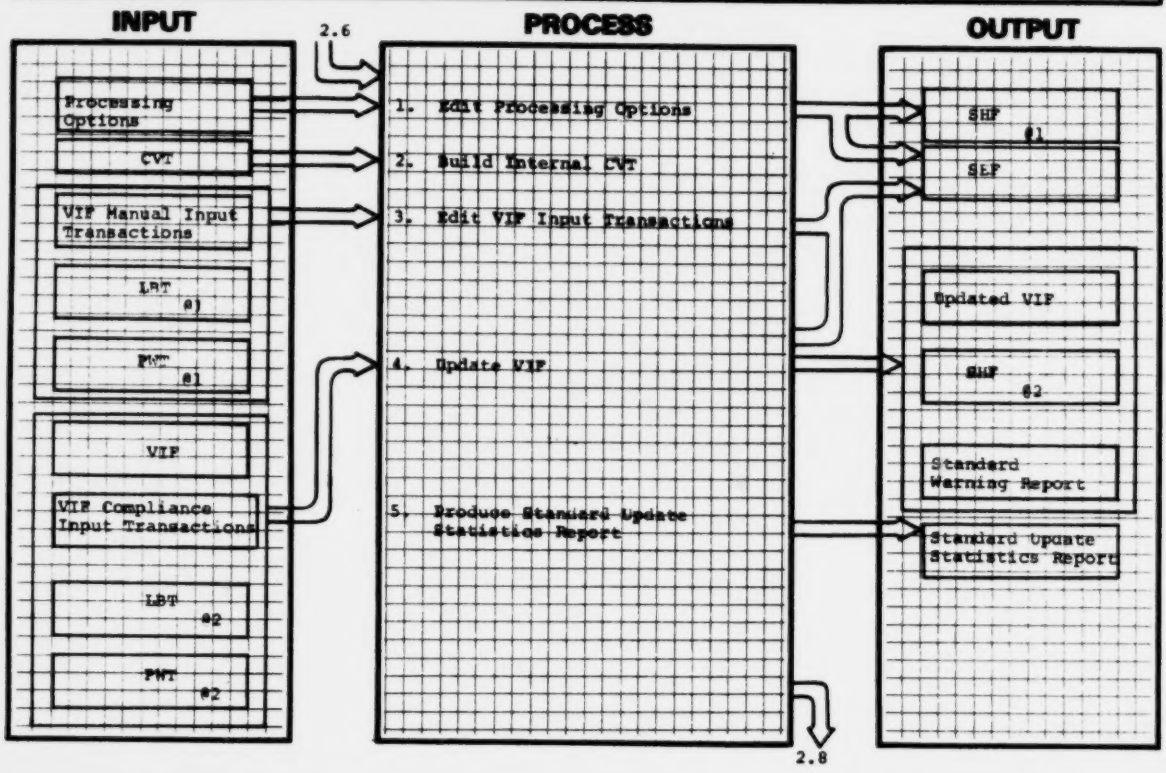
2. Violations File Record Creation and Maintenance Form

B. Data Element Descriptions:

1. Violations File (VIF)

MODEL STATE INFORMATION SYSTEM

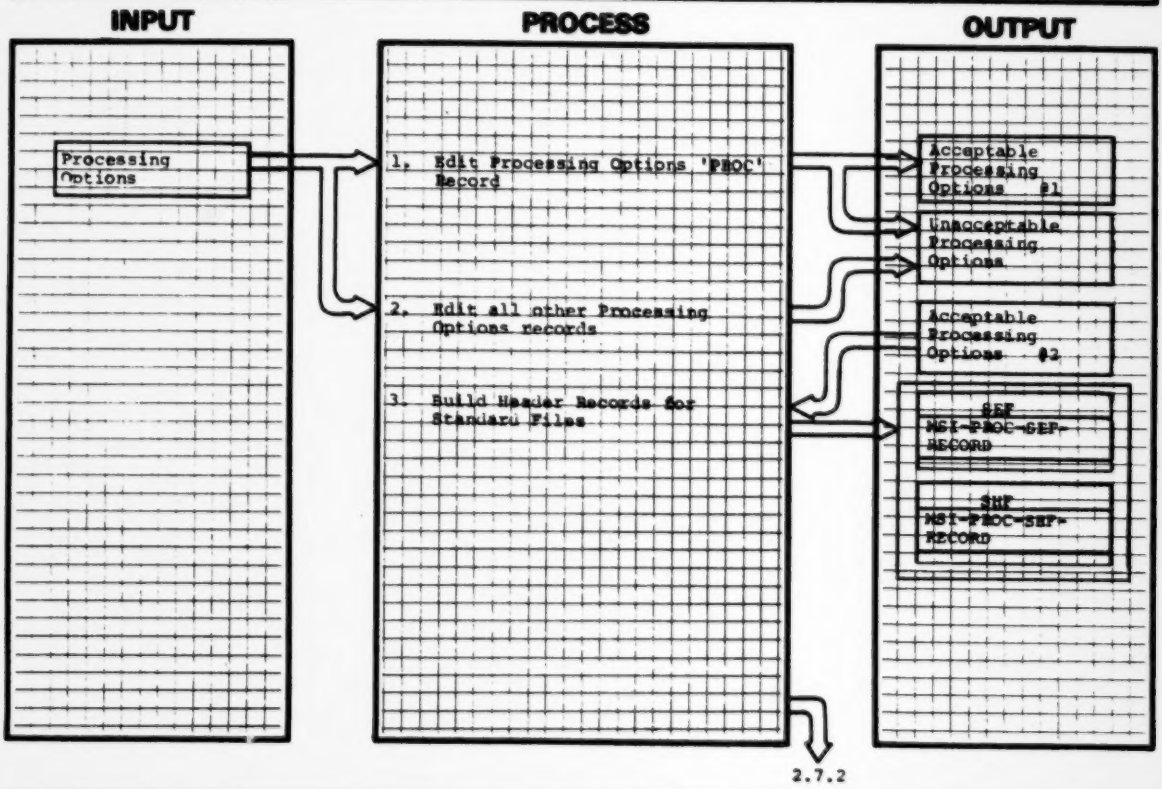
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 of 1
Diagram No.: 2.7 **Description:** Update VIF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Processing Options are edited and header records for the Standard History File (SHF) and the Standard Error File (SEF) are built.	2.7.1	WAQC120	
2	An Internal Code Value Table (CVT) is built from information in the CVT to be used in editing manual input transactions.	2.7.2	WAQC120	
3	Manual Violations File (VIF) Input transactions (pre-sorted by Violation ID and Transaction Code) are read and edited against the Internal CVT, the Laboratory Table (LBT), and the Public Water Table (PWT). Transactions in error are written to the SEF.	2.7.3	WAQC120	
4	The VIF is updated according to the manual input transactions after verification for EPA required fields. Errors are written to the SEF. Updates cause SHF records to be built. Missing EPA required fields are identified on the Standard Warning Report. Input transactions from program WAQC038 are assigned a Violation ID greater than 09999 and inserted into the first available position in the latter portion of the VIF.	2.7.4	WAQC120	
5	The Standard Update Statistics Report is produced. Any processing options in error are printed on this report. NOTE: Error codes are located in the Data Element Dictionary (DED).	2.7.5	WAQC120	

MODEL STATE INFORMATION SYSTEM

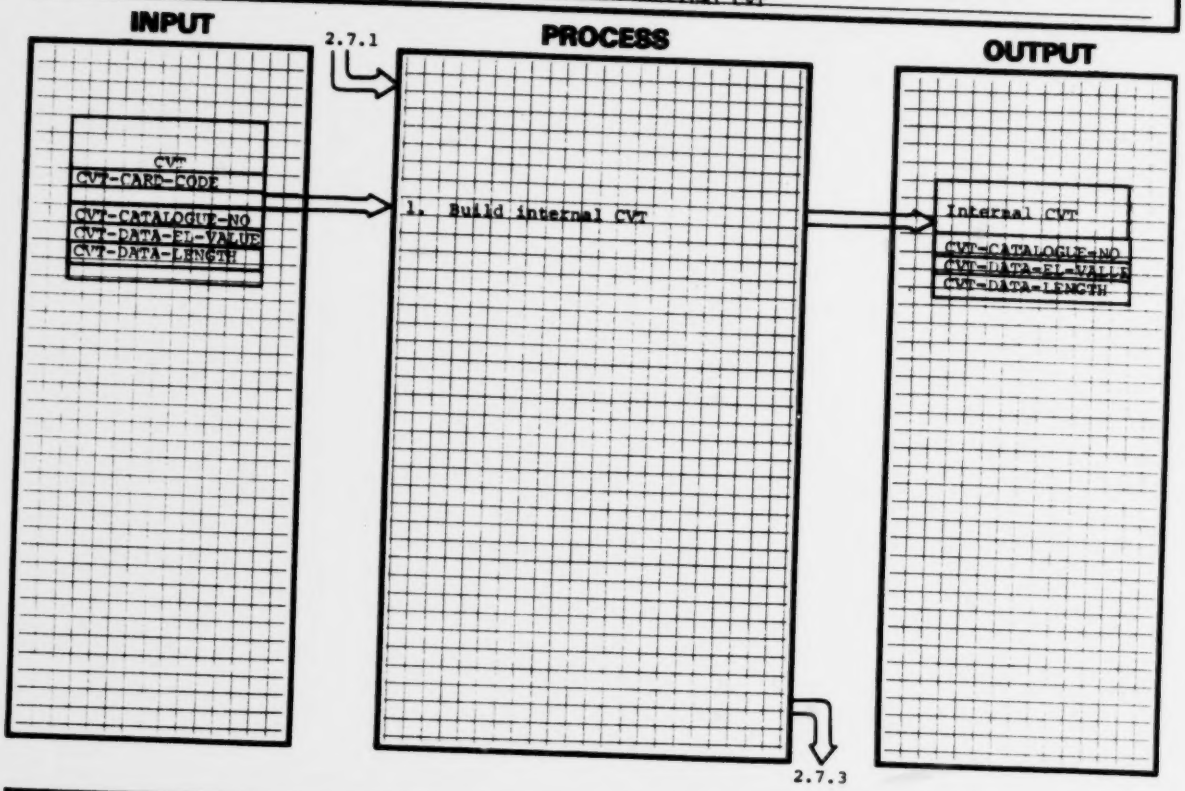
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1
Diagram No.: 2.7.1 **Description:** Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'PROC' in positions 1-4 of the record as follows: a. Current date (VIFI-PROC-DATE) must be a valid date. If it is invalid, write a message and terminate the run. If valid, convert to Julian mode for later use. b. The Standard Error File (SEF) processing options should be either a 'Y' or 'N' for both. If either is invalid, a default of 'N' is used. c. The Standard History File (SHF) processing option is valid for '1' through '4'. If invalid, a default of '1' is used.		WAQC120	118 222
2	Edit all other Processing Options records. All of these records are in error and processing should be terminated.		WAQC120	
3	Build a header record for both the SEF and SHF by using 'LOW VALUES' for MSI-PROC-ID and 'VI' for MSI-PROC-FILE-ID. If processing is to be terminated due to invalid processing options, all but the 'LOW VALUES' field should be blank. Otherwise, use 'VI' for the file ID and the Processing Options or the default values from Step 1. Note: If no 'PROC' record exists, processing will be terminated. If more than one 'PROC' record exists, processing will be terminated. Unacceptable Processing Options and associated messages are written on the Standard Update Statistics Report (see HIPO 2.7.5).		WAQC120	MSIS. 208 MSIS. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 of 1
Diagram No.: 2.7.2 **Description:** Build Internal CVT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of data element values. Appropriate records are stored internally to be used as edit criteria when certain fields are verified. These edit values are contained in the common CVT having a file ID of 'MS'. Only values for the Contaminant ID and Violation Type are obtained from this common file.		WAQC120	MSIS. 206 DED

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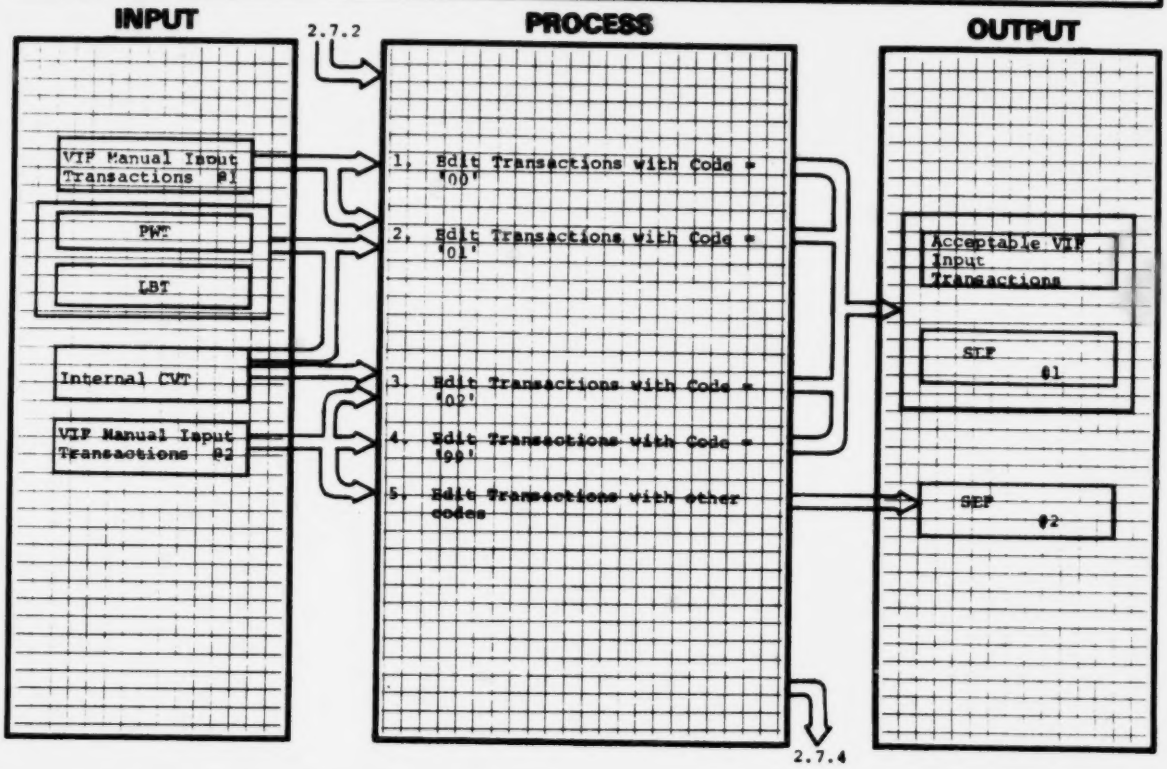
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 of 1
Diagram No.: 2.7.3 **Description:** Edit VIF Input Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Violations File (VIF) Manual Input Transactions with code = '00' in positions 6-7.	2.7.3.1	WAQC120	
2	Edit the VIF Manual Input Transactions with code = '01' in positions 6-7.	2.7.3.2	WAQC120	
3	Edit the VIF Manual Input Transactions with code = '02' in positions 6-7.	2.7.3.3	WAQC120	
4	Edit the VIF Manual Input Transactions with code = '99' in positions 6-7.	2.7.3.4	WAQC120	
5	Edit the VIF Manual Input Transactions with codes other than '00', '01', '02' or '99' in positions 6-7.	2.7.3.5	WAQC120	
	Note: All transactions in error generate a record in the Standard Error File (SEF). The specific error code to be used may be found in the Data Element Dictionary (DED).			

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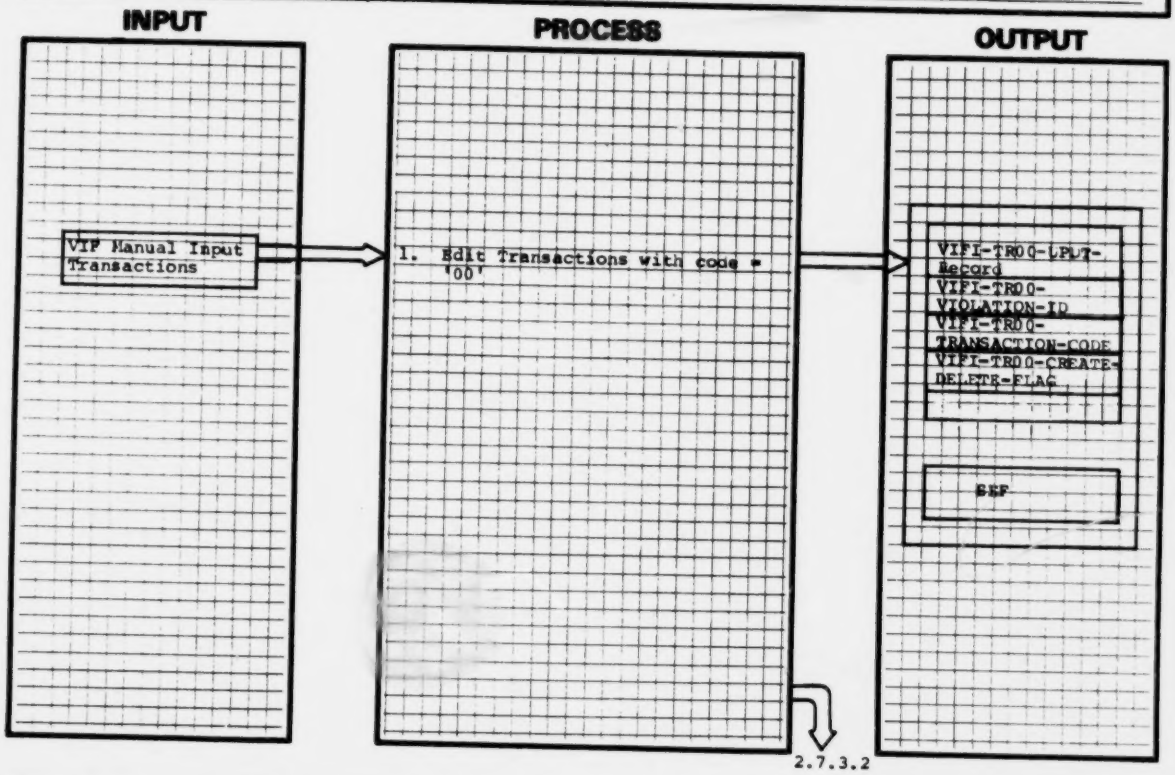
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1
Diagram No.: 2.7.3.1 **Description:** Edit Transactions with Code = '00'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction triggers creation of a new record for the Violations File (VIF). The record area should be blanked out in core. Actual parameters will follow in other transactions. Information on this transaction is edited as follows: a. A five digit numeric Violation-ID must be entered with acceptable values in the range of '00001' to '09999'.* b. VIFI-TR00-CREATE-DELETE-FLAG must equal 'Y'. If not, this transaction is in error. Use catalogue number 916 and error code 021. Transactions in error are written to the Standard Error File (SEF). The actual creation of the VIF Record takes place in the update section of the program (see HIPO 2.7.4.1). *Note: Violation ID's from '10000' to '99999' are reserved to be assigned by this program to input transactions from program WAQC038 (see HIPO 2.7.4.3) and may not be used for manual input transactions.		WAQC120	MSIS. 207 119 223 DED

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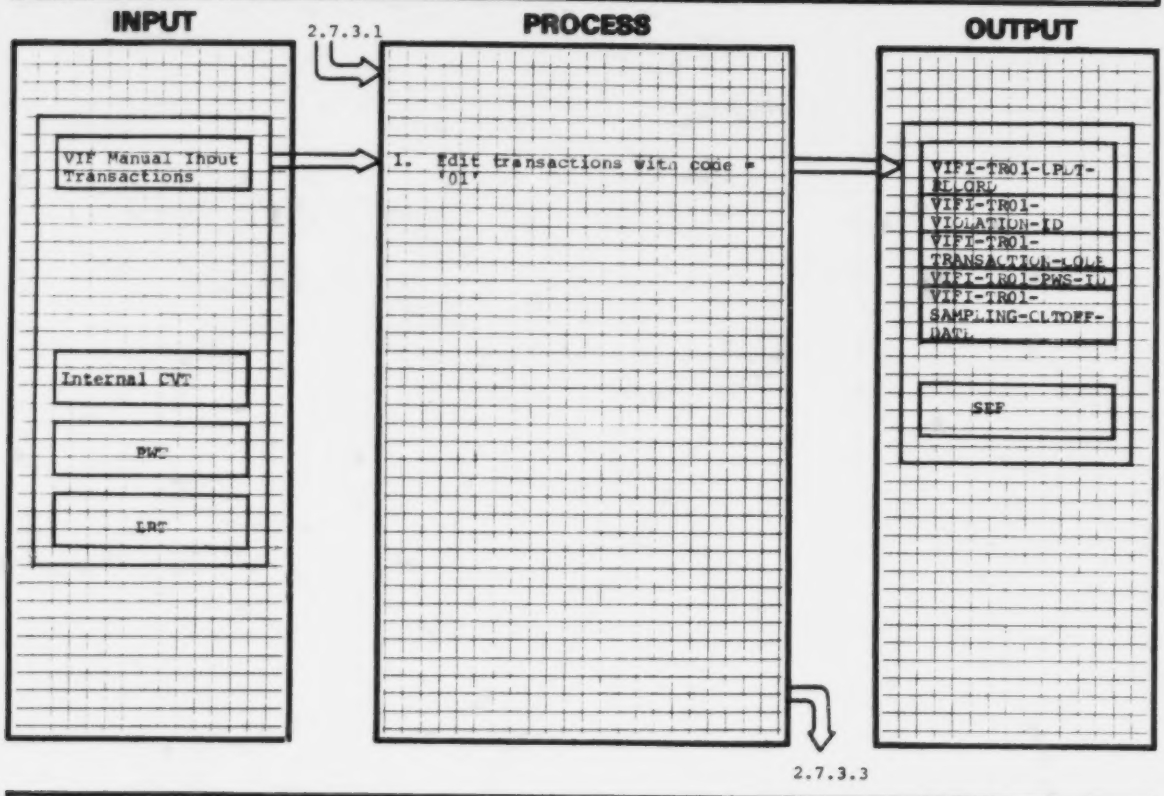
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 of 1
Diagram No.: 2.7.3.2 **Description:** Edit Transactions with Code = '01'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction adds or updates values contained in the initial part of a pre-existing Violations File (VIF) Record. Only non-blank fields are used to update. Information on this transaction is edited as described in the Data Element Dictionary (DED) with the following additions: a. A five digit numeric Violation-ID must be entered with acceptable values in the range of 00001 to 99999. No other fields are specifically required unless this transaction accompanies a '00' transaction with the same Violation ID, in which case the DED may be referenced for identification of required fields. b. A dollar sign ($) is a permissible value if it is in the leftmost position of the field and the rest of the field is blank for all elements except those required when creating the record (see the DED). The dollar sign signifies that value reinitialization (blanks if alphanumeric and zeros if numeric unless otherwise specified in DED) is to take place. c. All dates are edited for validity and converted to Julian format. If a transaction having a code = '00' with the same Violation ID was previously rejected, this entire transaction is also rejected. Use catalogue number 915 and error code 017. Transactions with one or more errors are written to the Standard Error File (SEF). Those fields in error are not applied when updating the VIF record.		WAQC120	MSIS. 206 MSIS. 207 PWSI. 201 PWSI. 234 119 224 250 256 DED

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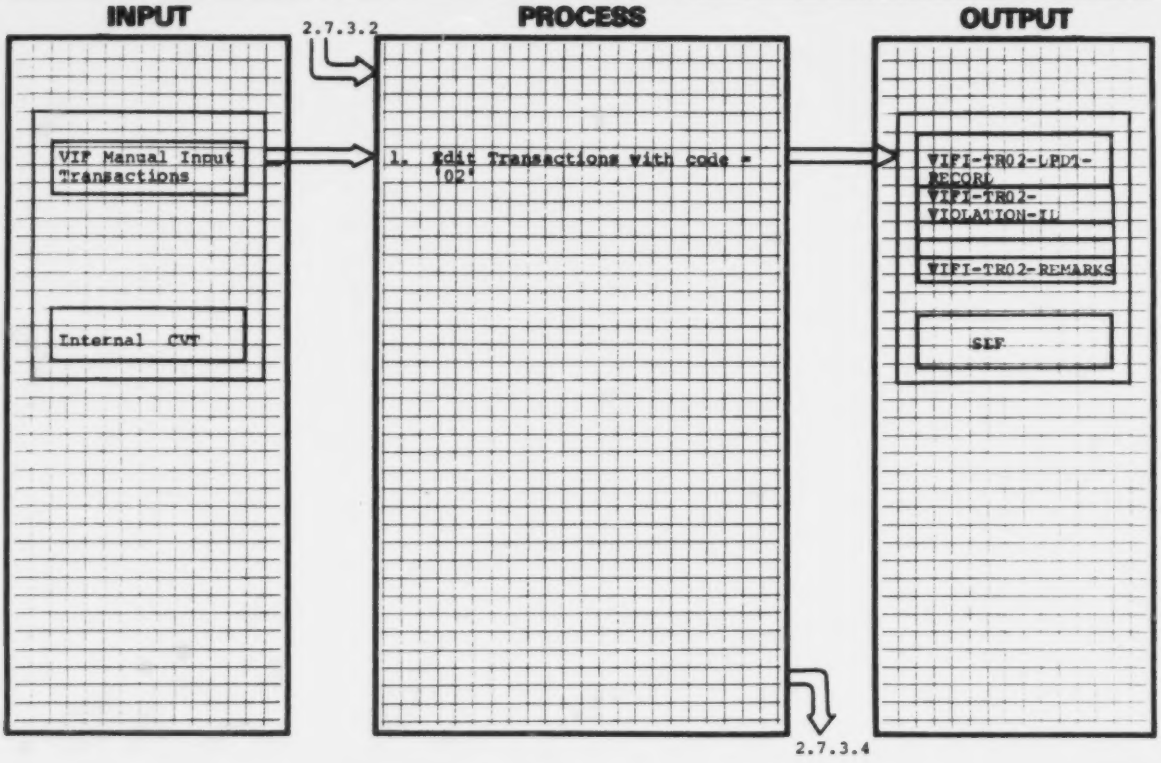
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1
Diagram No.: 2.7.3.3 **Description:** Edit Transactions with Code = '02'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction adds or updates values contained in the latter part of a pre-existing Violations File (VIF) Record. Only non-blank fields are used to update. Information on this transaction is edited in the same manner as '01' transactions (see HIPO 2.7.3.2) and according to criteria described in the Data Element Dictionary (DED). If a transaction having a code = '00' with the same Violation ID was previously rejected, this entire transaction is also rejected. Transactions with one or more errors are written to the Standard Error File (SEF). Those fields in error are not applied when updating the VIF record.		WAQC120	MSIS. 206 MSIS. 207 120 225 DED

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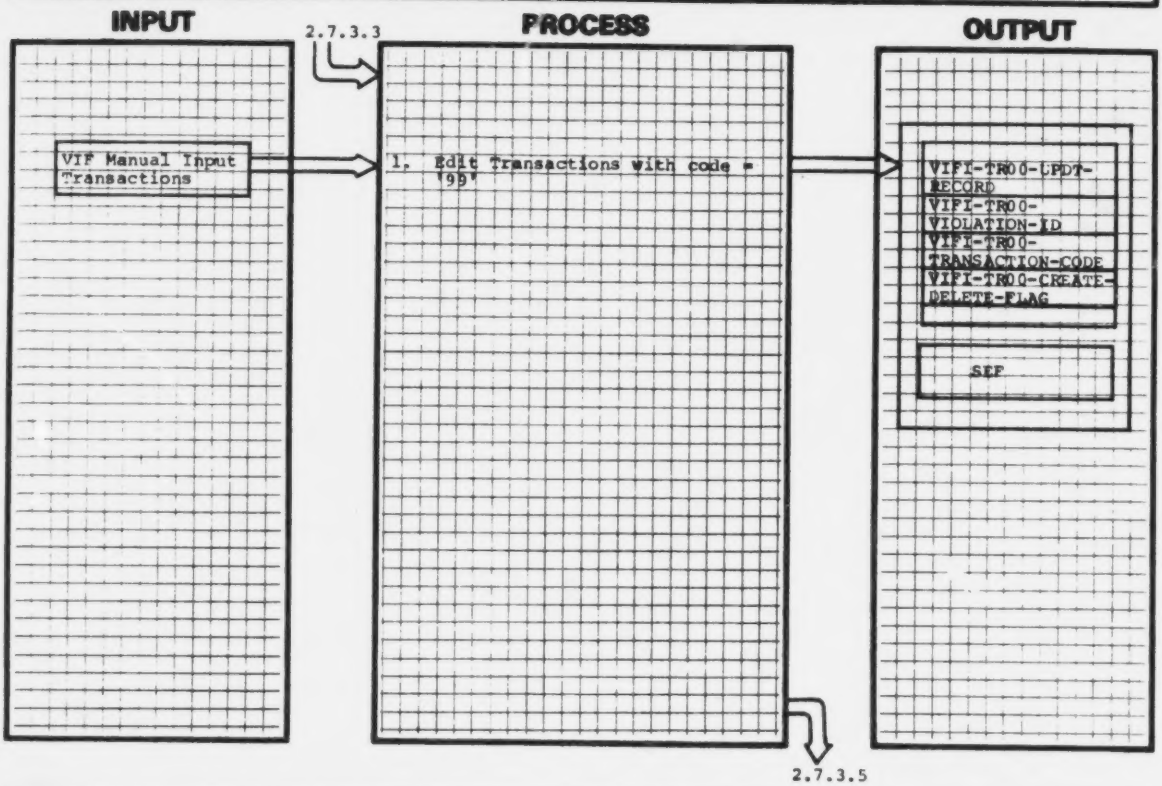
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.3.4 **Description:** Edit Transactions with Code = '99'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction causes a pre-existing Violations File (VIF) Record to be deleted. Information on this transaction is edited as follows: a. A five digit numeric Violation-ID must be entered with acceptable values in the range of 00001 to 99999. b. VIFI-TR00-CREATE-DELETE-FLAG must equal 'Y' for deletion to take place. Use catalogue number 916 and error code 020. Transactions in error are written to the Standard Error File (SEF). The actual deletion of the record takes place in the update section of the program (see HIPO 2.7.4.1).		WAQC120	MSIS. 207 119 223

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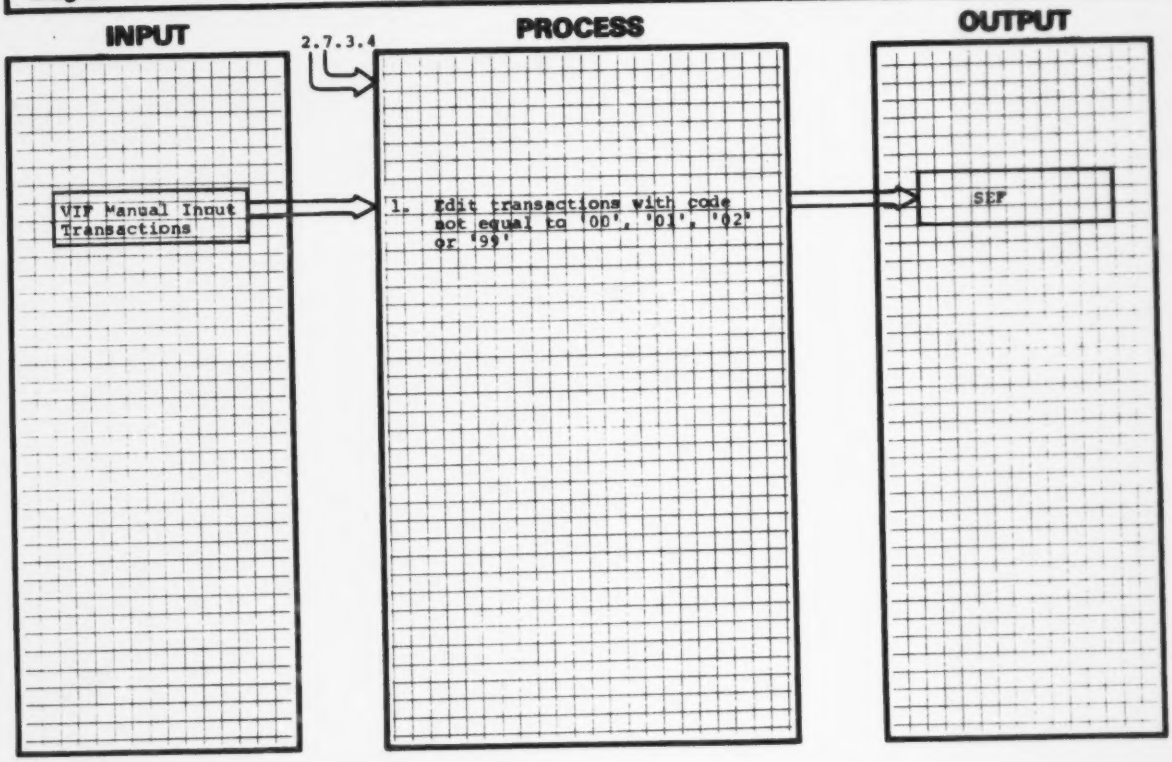
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.3.5 **Description:** Edit Transactions with Other Codes



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	All transactions with codes not equal to '00', '01', '02' or '99' are erroneous and result in the entire transaction being written to the Standard Error File (SEF) with an error code of 017 and catalogue number 915.		WAQC120	MSIS. 207

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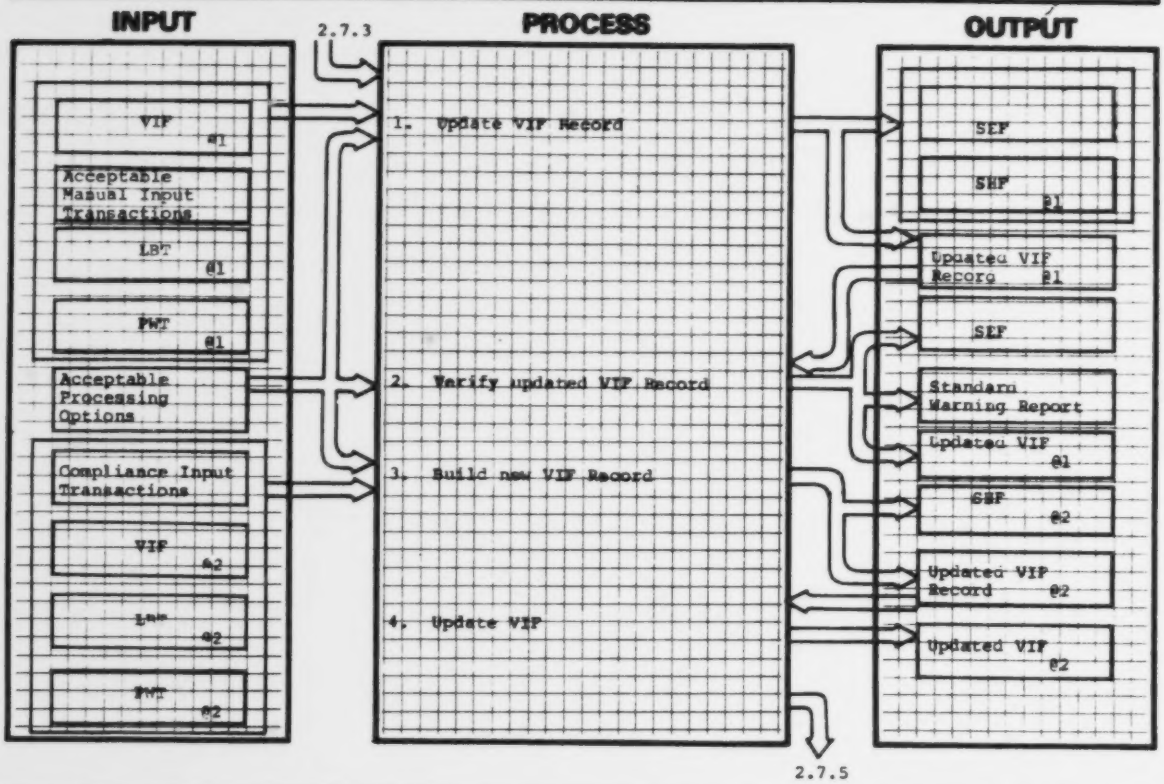
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.4 **Description:** Update VIF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Do the actual update of the Violations File (VIF) Records according to the acceptable manual input transactions. The Laboratory Table (LBT) is used to check updates to Analysis Method, if any, and to identify Laboratory Name and Lab Owner Type when building the updated VIF Record. The Public Water Table (PWT) is used to identify Public Water System (PWS) Name, PWS Type, Population, PWS Source, Region and District.	2.7.4.1	WAQC120	
2	The updated VIF record is verified to see if all elements to be reported to EPA are present. The current date is also inserted as the last update date and used on the Standard Warning Report.	2.7.4.2	WAQC120	
3	New VIF records are built from input transactions generated from the Violations Identification Module of this subsystem (program WAQC038). Violation ID is calculated for each record and the current date is inserted as the last update date. The LBT and PWT are used for the same purposes as in Step 1.	2.7.4.3	WAQC120	
4	The VIF is updated from the records built in Step 3. Note: All fields updated for each transaction applied to the VIF cause a Standard History File (SHF) record to be written to the SHF.	2.7.4.4	WAQC120	

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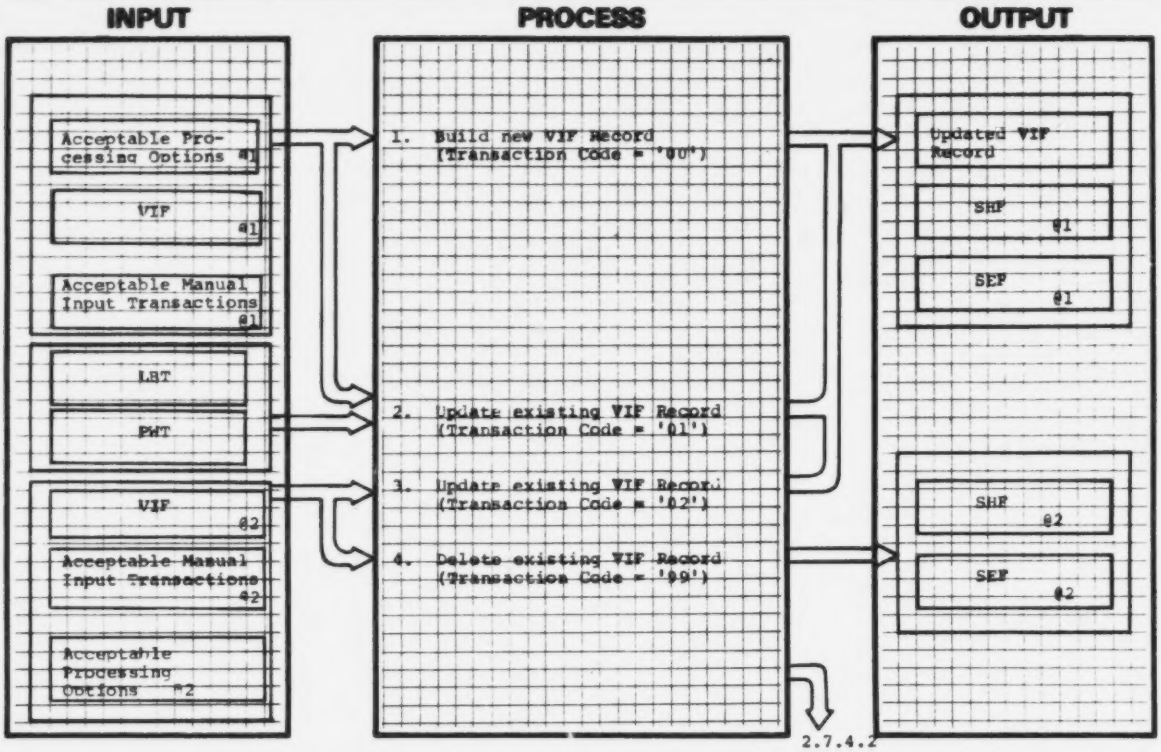
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 of 1

Diagram No.: 2.7.4.1 **Description:** Update VIF Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a new Violations File (VIF) record for transaction code = '00'.	2.7.4.1.1	WAQC120	
2	Update fields for an existing VIF record as specified on transactions with code = '01'. If the '01' transaction specifies updating of a record previously created by a '00' transaction and the '00' transaction failed in Step 1, the updates specified on the '01' transaction will not be applied.	2.7.4.1.2	WAQC120	
3	Update fields for an existing VIF record as specified on transactions with code = '02'. If the '02' transaction specifies updating of a record previously created by a '00' transaction and the '00' transaction failed in Step 1, the updates specified on the '02' transaction will not be applied.	2.7.4.1.3	WAQC120	
4	Delete the VIF record for transaction code = '99'.	2.7.4.1.4	WAQC120	
	Note: All transactions in error generate a record in the Standard Error File (SEF). The specific error codes may be found in the Data Element Dictionary (DED).			

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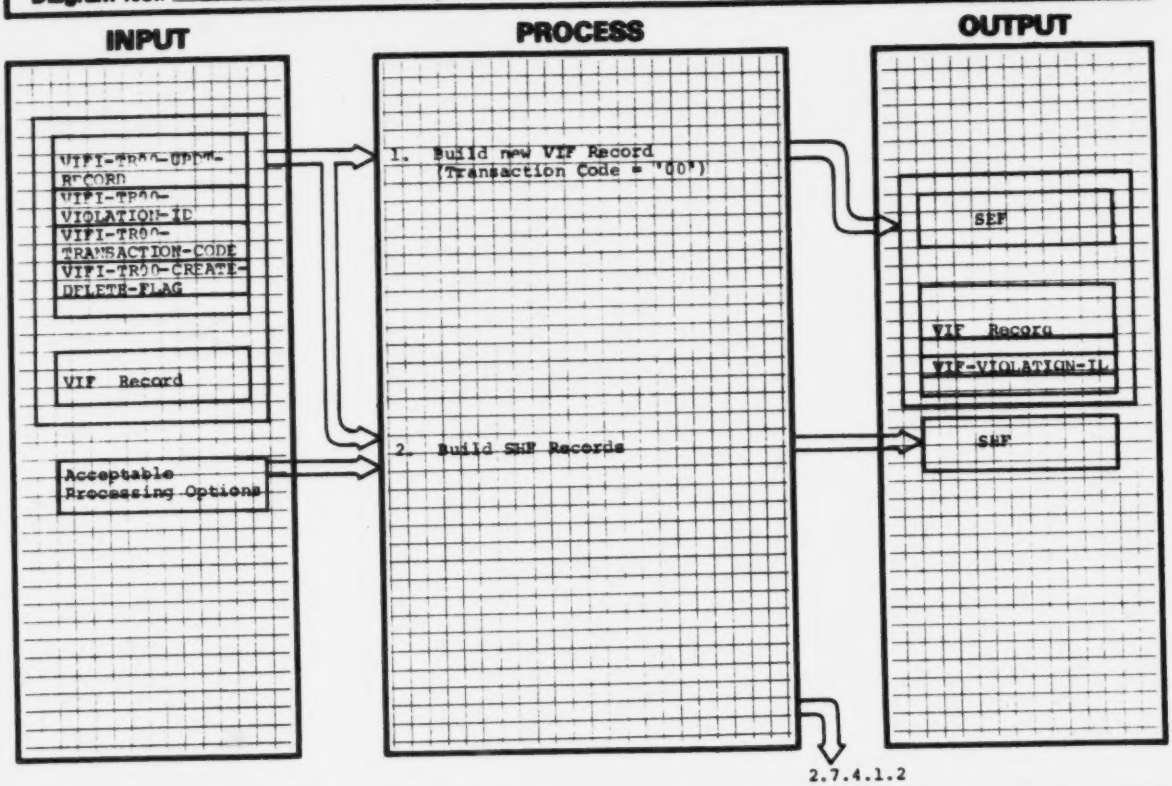
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.4.1.1 **Description:** Build new VIF Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '00' creates a record for the Violations File (VIF). Prior to the actual building of the record, the storage areas for the record are initialized in core and the Violation-ID field entered on the transaction overlays the initialized value in core. Thus, those fields which are blank on future transactions ('01' and '02') will remain initialized in core. All alphanumeric fields should be initialized to blanks. All numeric fields should be initialized to zeros. If the specified Violation-ID is already on the VIF, the transaction is in error and should be written to the Standard Error File (SEF). In addition, a program control flag is set to reject all '01' and '02' transactions with the same Violation-ID so the record on the VIF will not erroneously be updated.		WAQC120	223 255 MSIS. 207 DED
2	Build a Standard History File (SHF) Record. Use 'VI' for SHF-FILE-ID, Violation-ID for SHF-RECORD-ID, the Julian current date from the 'PROC' record for SHF-CUR-UPDATE-DATE and SHF-LAST-UPDATE-DATE and the initialized value for SHF-OLD-VALUE. Use the VIF-VIOLATION-ID value as SHF-NEW-VALUE. The SHF-DATA-ELEMENT-CODE should be the code for the VIF-VIOLATION-ID.		WAQC120	223 255 MSIS. 202 DED

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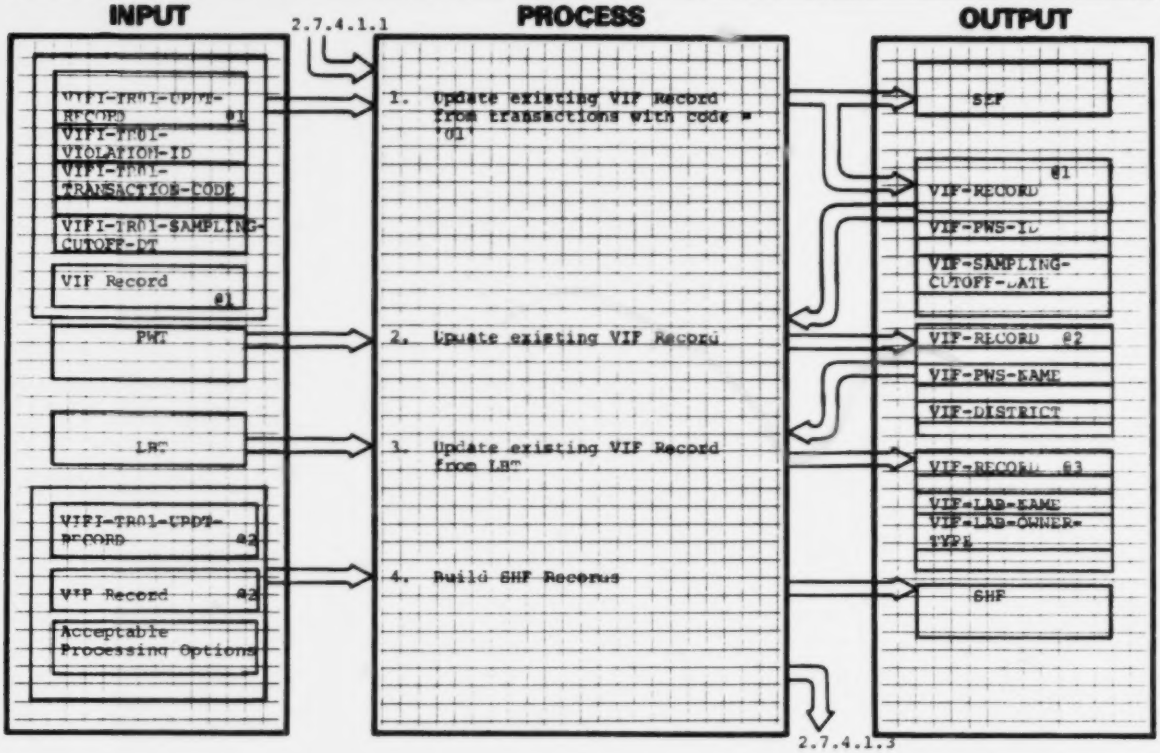
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.4.1.2 **Description:** Update Existing VIF Record (Transaction Code = '01')



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '01' allows updating of the initial part of a Violations File (VIF) record, including PWS-ID and LAB-ID. These two fields are subsequently used in Steps 2 and 3 to capture other information from the Public Water Table (PWT) and the Laboratory Table (LBT), respectively. Non-blank fields on the acceptable '01' transaction are used to replace the corresponding data elements on the VIF record. A dollar sign ($) in the leftmost position of an otherwise blank input transaction field indicates that the corresponding data element on the VIF record should be reinitialized (see HIPO 2.7.4.1.1 for values). If the Violation-ID specified on the transaction is not present on the VIF, the entire transaction is in error and is written to the Standard Error File (SEF).		WAQC120	MSIS. 207 224 255 DED
2	Information from the PWT is used to replace values on the VIF record for PWS-NAME, PWS-TYPE, POPULATION, SOURCE-CODE, REGION and DISTRICT for the PWS-ID from Step 1 if the PWS ID was updated.		WAQC120	PWSI. 201 PWSI. 234 255
3	Information from the LBT is used to replace values on the Violations File (VIF) record for LAB-NAME and LAB-OWNER-TYPE for the LAB-ID from Step 1 if the LAB-ID was updated.		WAQC120	250 255 256
4	A Standard History File (SHF) record is built for every field which is updated. SHF-OLD-VALUE contains the value of the VIF field before it was updated and SHF-NEW-VALUE contains the value after the update. Note: The PWT and the LBT are direct access files.		WAQC120	MSIS. 202 224 255 DED

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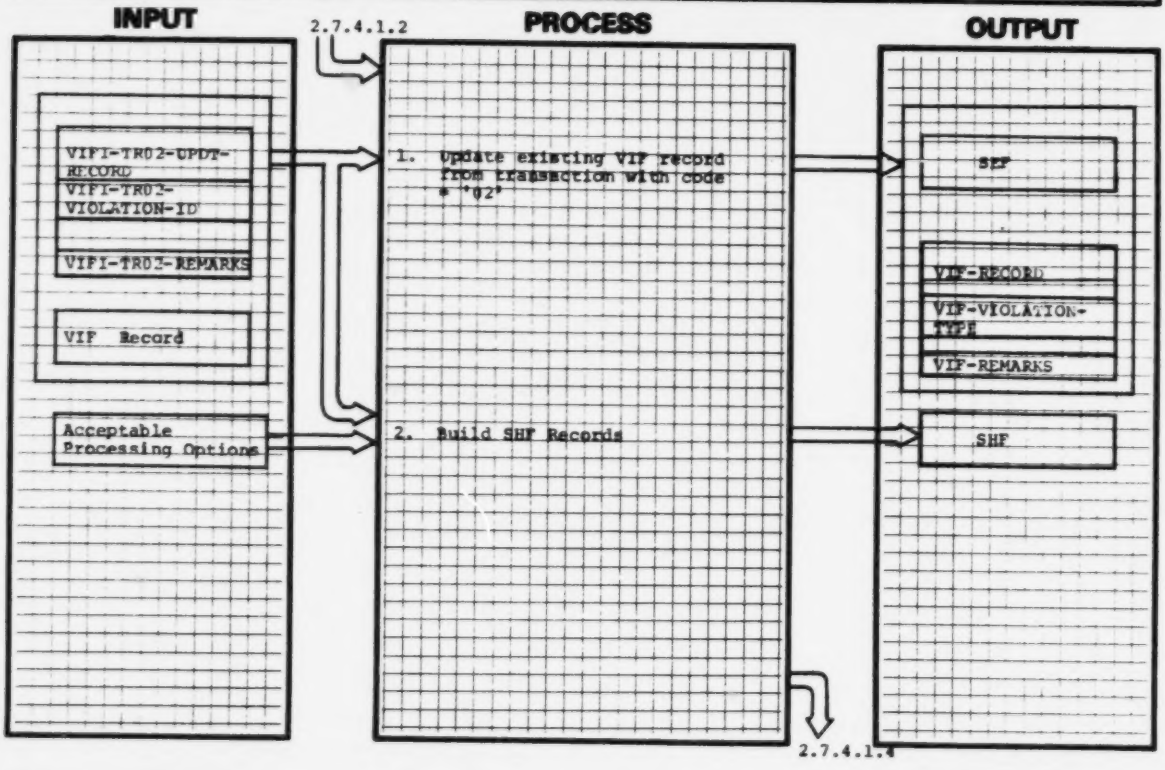
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.4.1.3 **Description:** Update Existing VIF Record (Transaction Code = '02')



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '02' allows updating of the latter part of a Violations File (VIF) Record. Non-blank fields on the acceptable '02' transactions are used to replace the corresponding data elements on the VIF Record. A dollar sign ($) in the leftmost position of an otherwise blank input transaction field indicates that the corresponding data element on the VIF Record should be reinitialized (see HIPO 2.7.4.1.1 for values). If the Violation ID specified on this transaction is not present on the VIF, the entire transaction is in error and is written to the Standard Error File (SEF).		WAQC120	MSIS. 202 225 255 DED
2	A Standard History File (SHF) record is built for every field which is updated. SHF-OLD-VALUE contains the value of the VIF field before it was updated and SHF-NEW-VALUE contains the value after the update.		WAQC120	MSIS. 202 225 255 DED

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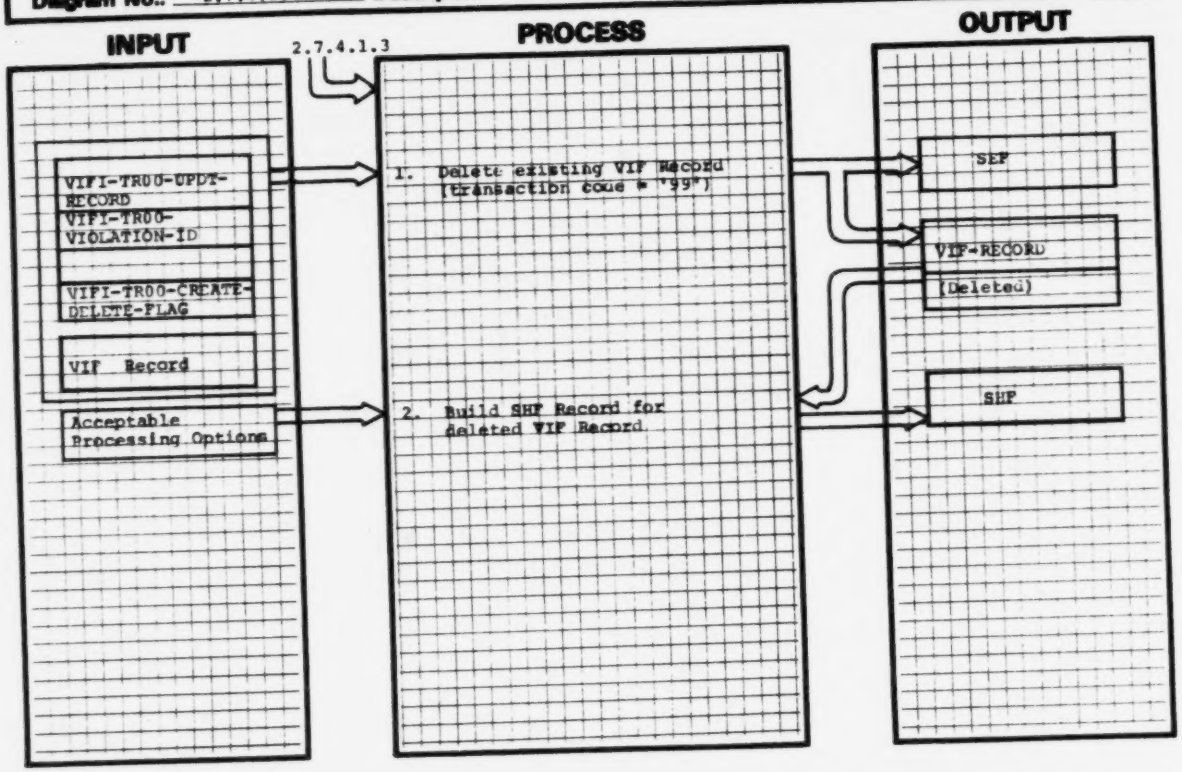
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.4.1.4 **Description:** Delete Existing VIF Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '99' allows deletion of an existing record on the Violations File (VIF). If the specified Violations ID is not present on the VIF, the transaction is in error and is written to the Standard Error File (SEF).		WAQC120	223 255 MSIS. 207
2	Build a single Standard History File (SHF) record for the deleted VIF record. Use data element code = '999', SHF-OLD-VALUE = 'RECORD DELETED' and SHF-NEW-VALUE equal blanks. The processing option current date (Julian format) is used for SHF-LAST-UPDATE-DATE.		WAQC120	MSIS. 202 255 DED

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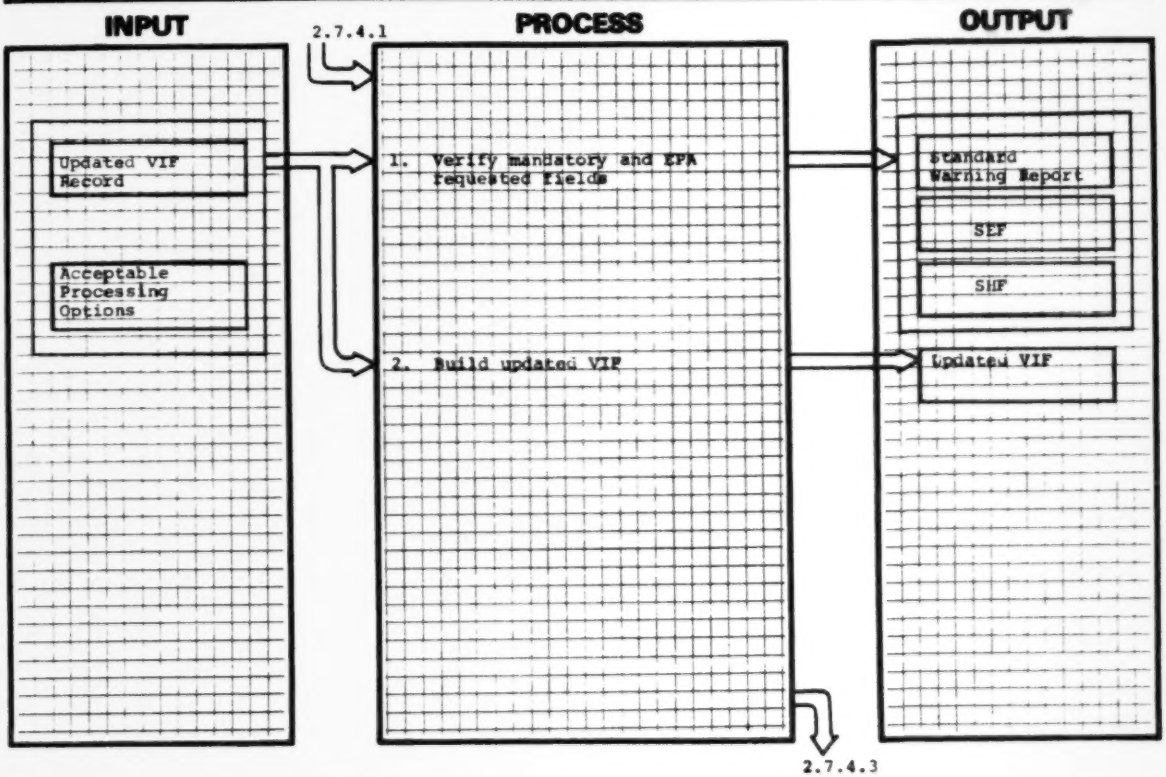
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.4.2 **Description:** Verify Updated VIF Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify those updated Violations File (VIF) records which were just created with a '00' transaction as follows: a. Verify any new VIF record to ensure that all fields mandated by MSIS for record creation are present. The specific fields to verify may be found by referencing the Data Element Dictionary (DED). If any are missing, the record is not to be written to the VIF in Step 2. In addition, if any mandatory fields are missing, a Standard History File (SHF) record is built with 'LOW VALUES' for the data element code and Violation-ID for SHF-RECORD-ID and all other fields blank if alphanumeric and zero if numeric. Also, rebuild the transactions '00', '01', and '02' which created this record and write each one to the Standard Error File (SEF) with error code '018' and catalogue number for the VIF-ID. b. Verify the updated VIF record to ensure that all EPA requested fields are present. The specific EPA requested fields are identified by referencing the DED. If any are missing, produce a message on the Standard Warning Report.		WAQC120	MSIS. 310 255 DED MSIS. 207
2	The updated record, unless it did not pass Verify 1.a., may now safely be written to the updated VIF. Before writing the record, if an update occurred, set the last update date equal to the current date (Julian format). Do not write the record if it has been deleted. If the record was updated, copy it, as is, to the updated VIF.		WAQC120	255

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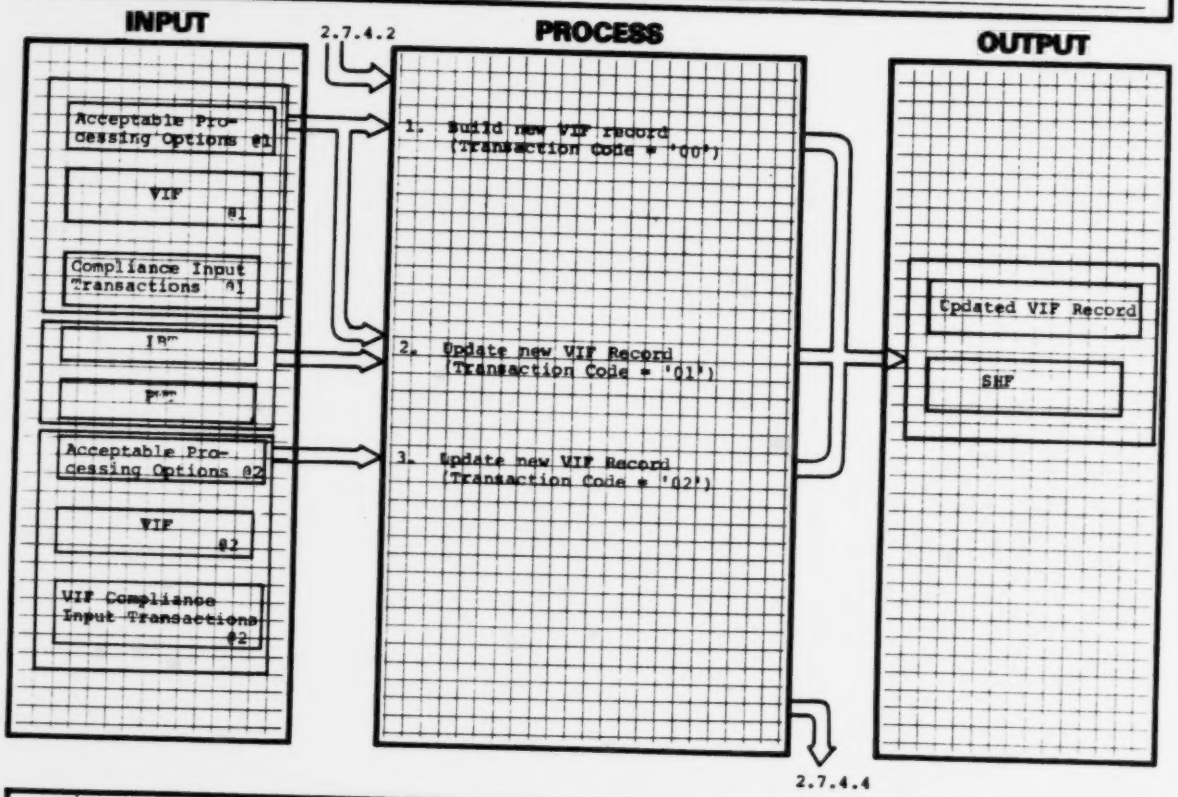
Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 of 1

Diagram No.: 2.7.4.3 **Description:** Build New VIP Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a new Violations File (VIF) record from the '00' transaction generated from program WAQC038. Violation-ID for these transactions are created from Violation-ID gaps in the VIF and are not present on the transaction.	2.7.4.3.1	WAQC120	
2	Update the record created in Step 1 from information on the '01' transaction generated from program WAQC038. The Laboratory Table (LBT) and the Public Water Table (PWT) are used to provide information on the VIF record which does not appear on any of the input transactions.	2.7.4.3.2	WAQC120	
3	Update the record created in Step 1 from information on the '02' transaction generated from program WAQC038.	2.7.4.3.3	WAQC120	
	Note: Compliance Input Transactions will always contain a '00' transaction followed by both a '01' and '02' transaction. These will always be in the order '00' followed by '01', followed by '02', followed by '00', etc.			

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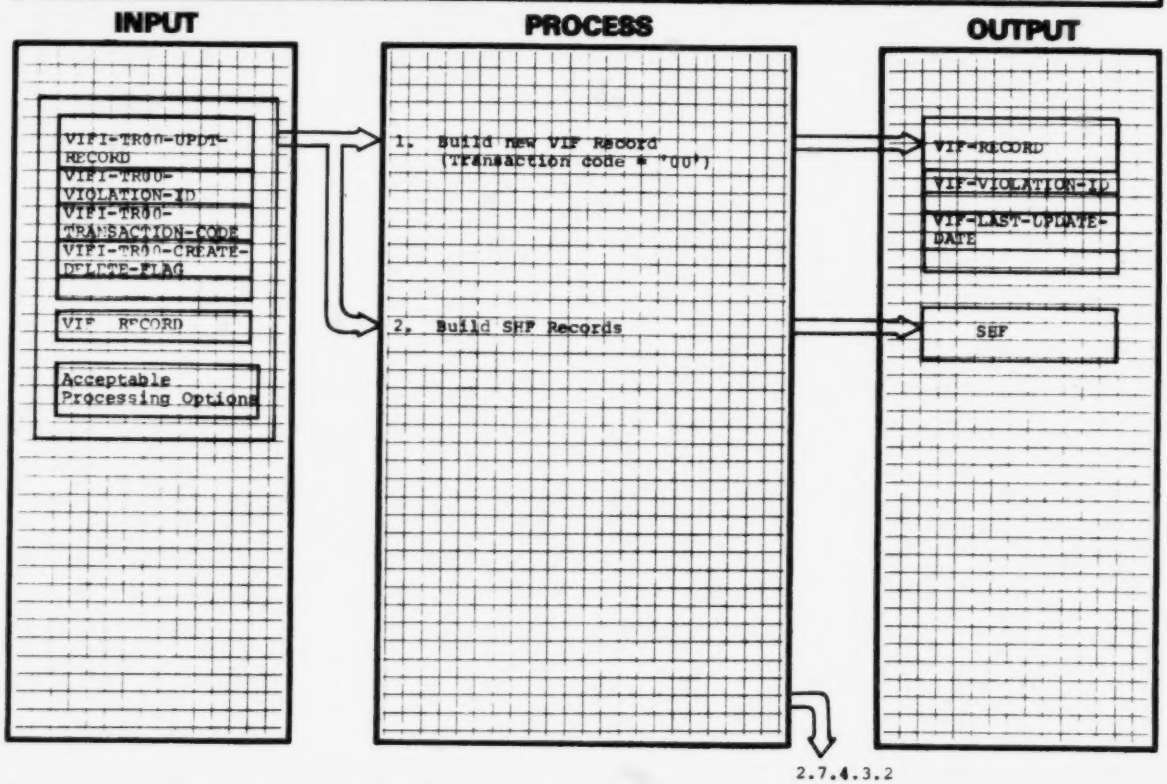
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.4.3.1 **Description:** Build New VIF Record (Transaction Code = '00')



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '00' creates a record for the Violations File (VIF). Prior to the actual building of the record, the storage areas for the record on future transactions ('01' and '02') will remain initialized in core. All alphanumeric fields should be initialized to blanks. All numeric fields should be initialized to zeros. Violation ID's on transactions generated from program WAQC038 are blank and thus are assigned in this step. Those assigned here will be from 10000 to 99999. As the VIF is read during the update process, the Violation ID of the current VIF record will be compared to the Violation ID of the previous one written. If the difference is more than one, the Violation ID assigned to the new VIF record being built here will be one higher than that of the previous VIF record written to the updated VIF. The current date is used for VIF-LAST-UPDATE-DATE.		WAQC120	223 255 DED
2	Build a Standard History File (SHF) Record. Use 'VI' for SHF-FILE-ID, VIFI-VIOLATION-ID for SHF-RECORD-ID and SHF-NEW-VALUE, the Julian current date for SHF-CUR-UPDATE-DATE and SHF-LAST-UPDATE-DATE and the initialized value for SHF-OLD-VALUE. The SHF-CATALOGUE-NO should be the code for the VIF-VIOLATION-ID.		WAQC120	MSIS. 202 223 255 DED

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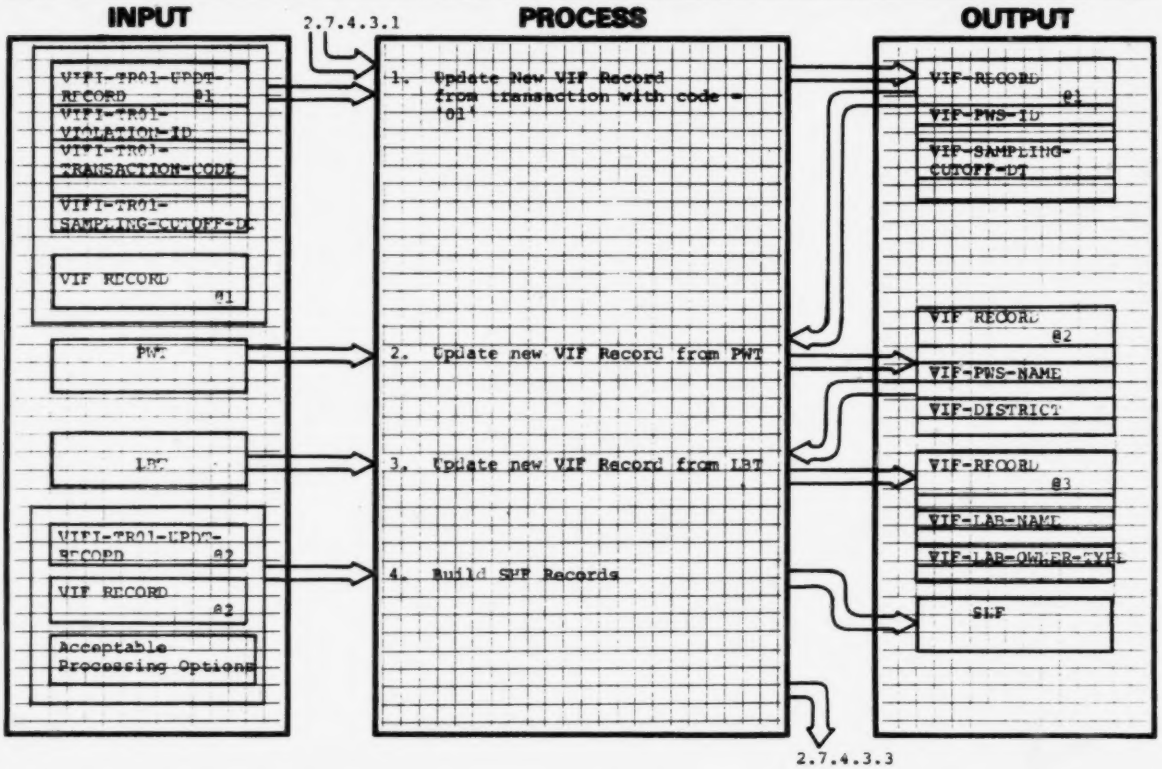
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.4.3.2 **Description:** Update New VIF Record (Transaction Code = '01')

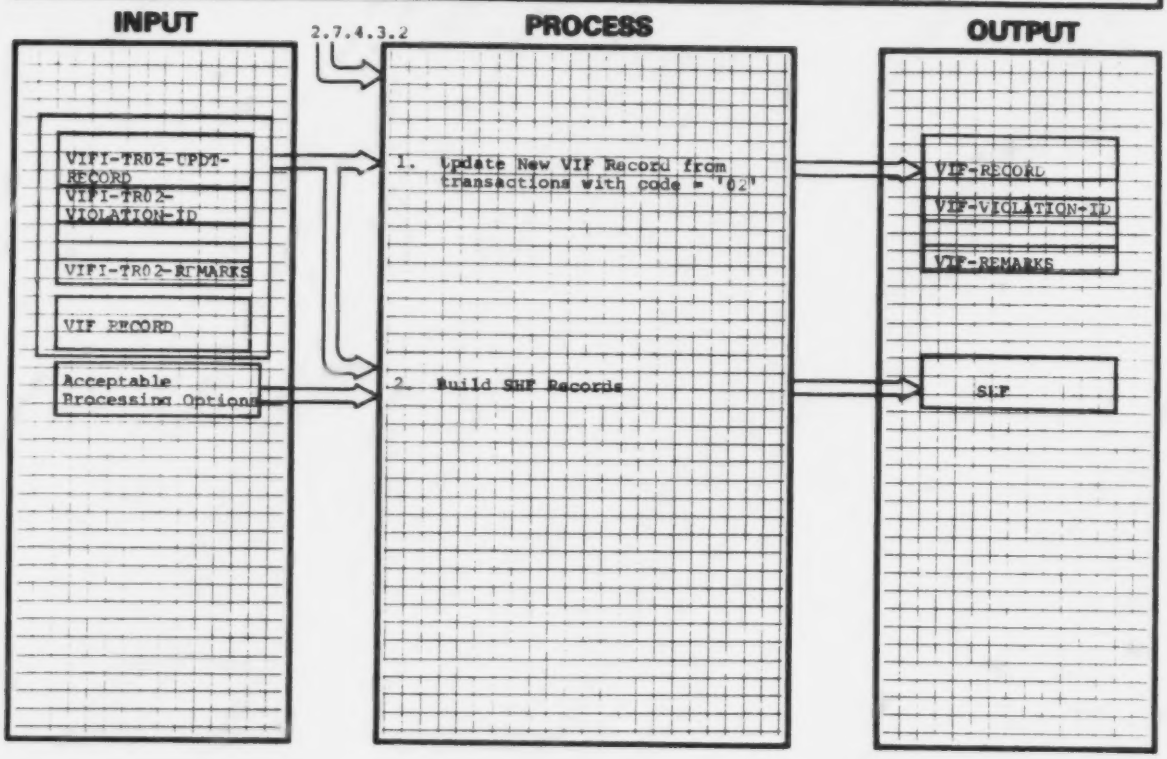


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '01' allows updating of the initial part of a new Violations File (VIF) Record, including PWS-ID and LAB-ID. These two fields are subsequently used in Steps 2 and 3 to capture other information from the Public Water Table (PWT) and Laboratory Table (LBT), respectively. Non-blank fields on the '01' transaction are used to update the corresponding data elements on the new VIF Record. The dollar sign ($) is not used for transactions from WAQC038.		WAQC120	224 255 DED
2	Information from the PWT is used to update values on the new VIF Record for PWS-NAME, PWS-TYPE, POPULATION, SOURCE-CODE, REGION and DISTRICT for the PWS-ID from Step 1.		WAQC120	PWSI. 201 PWSI. 234 255
3	Information from the LBT is used to replace values on the new VIF Record for LAB-NAME and LAB-OWNER-TYPE for the LAB-ID from Step 1.		WAQC120	250 255 256
4	A Standard History File (SHF) record is built for every field which is updated. SHF-OLD-VALUE contains the value of the VIF Record before it was updated and SHF-NEW-VALUE contains the value after the update.		WAQC120	MSIS. 202 224 255 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

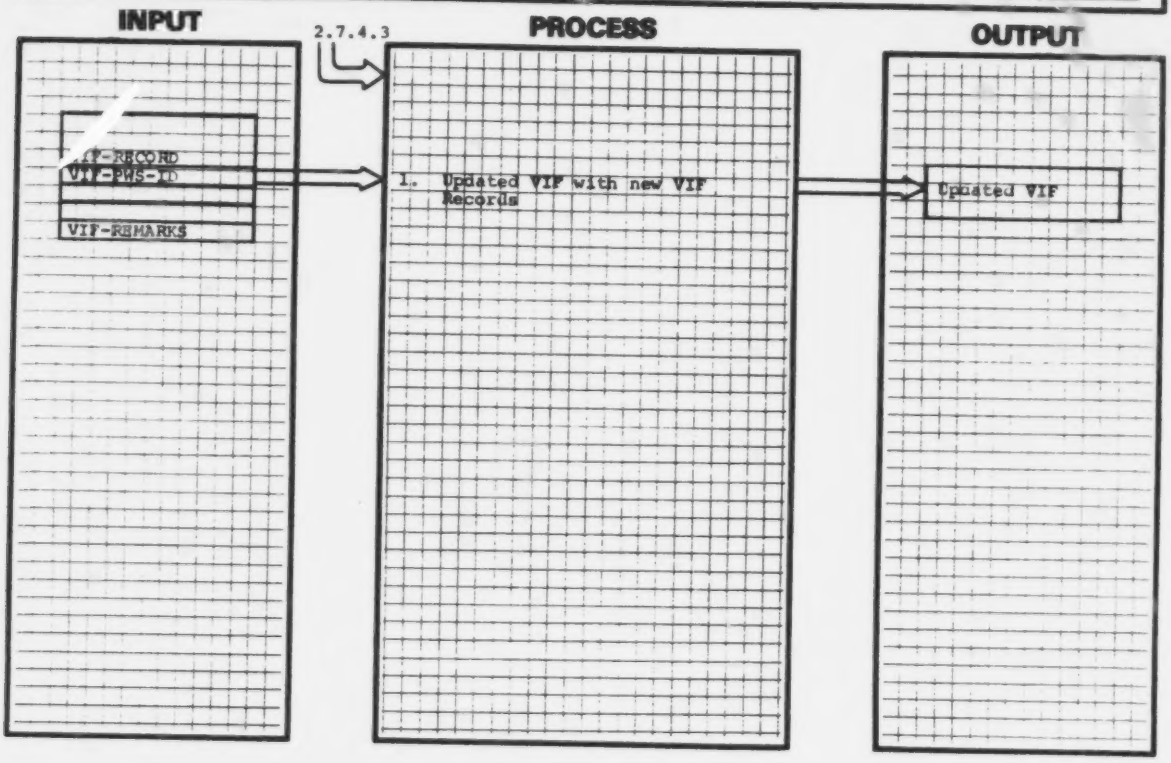
Diagram No.: 2.7.4.3.3 **Description:** Update New VIF Record (Transaction Code = '02')



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '02' allows updating of the latter part of a new Violations File (VIF) Record. Non-blank fields on the '02' transactions are used to update the corresponding data elements on the new VIF Record. The dollar sign ($) is not used for transactions from WAQC038.		WAQC120	225 255 DED
2	A Standard History File (SHF) record is built for every field which is updated. SHF-OLD-VALUE contains the value of the new VIF Record before it was updated and SHF-NEW-VALUE contains the value after the update.		WAQC120	MSIS. 202 225 255 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1
Diagram No.: 2.7.4.4 **Description:** Updated VIF

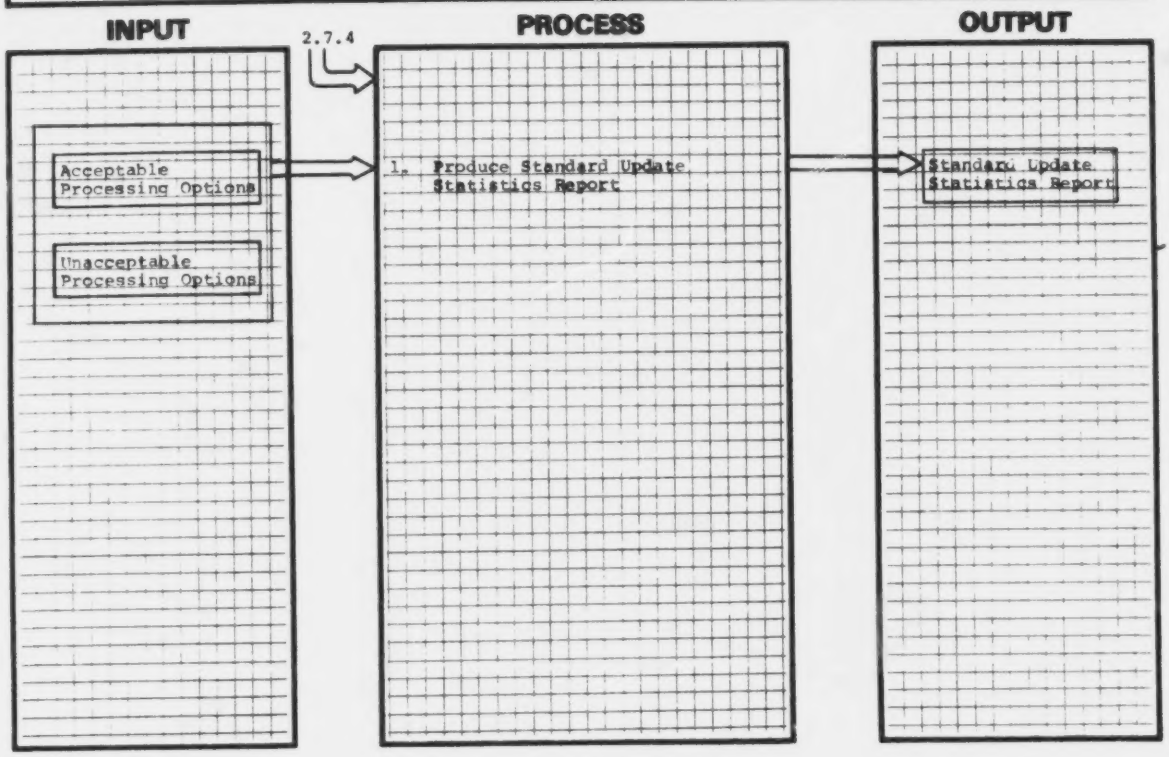


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The new Violations File (VIF) Record is written to the Updated VIF. Thus, all compliance transactions identified during the Compliance Summary Process (Programs WAQC031 through WAQC037) are entered into the VIF.		WAQC120	255

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2/21/77 **Page:** 1 **of** 1

Diagram No.: 2.7.5 **Description:** Produce Standard Update Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Upuate Statistics Report is always produced. The following two formats may be used: a. The Standard Update Statistics Report contains: 1. Totals which were accumulated during the update process: (a) number of records originally on the file (b) number of acceptable transactions (c) number of error records created (d) number of records modified on the file (e) number of new records added to the file (f) number of records deleted from the file (g) number of records currently on the file 2. Totals (d) through (g) are computed as a percent of (a). b. If any Processing Options were in error, the record and associated error messages can be produced instead of or in addition to the totals in 1.a.		WAQC120	MSIS. 300 MSIS. 309

Water Quality Compliance Subsystem .2
SELECT From VIF .8
BUILD Internal DET .1
EDIT Processing Options .2
SELECT VIF Records .3
Build VIF Report Records .4
SORT VIF Report Records .5
PRODUCE Reports .6

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2.8.5 - Sort Violations File (VIF) Report Records
2.8.6 - Produce Reports

LEGEND

Data Flow

Entries & Exits

Multiple I/O Reference

Diagram Type: VTOC

Diagram No: 2.8

Subsystem: Water Quality Compliance

Description: Select from Violations File (VIF)

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC125
DATE: January 6, 1977

I. OBJECTIVES:

The objective of this program is to search the Violations File (VIF) and select specific VIF records for producing the Compliance Summary Report based upon given selection criteria. The Compliance Summary Report and a Standard Selection Statistics Report are then produced.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Violations File	VIF-RECORD	WAQC.255
2.	Data Element Table	DET-RECORD	MSIS.201
3.	Public Water Table	PWT-RECORD PWT-HEADER-RECORD	PWSI.201 PWSI.234

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	LAYOUT
1.	Processing Options	VIFI-PROC-RECORD	WAQC.111	WAQC.236
2.	Selection Form (SEL1)	VIFI-SELECT-1-RECORD	WAQC.116	WAQC.237
3.	Selection Form (SEL2)	VIFI-SELECT-2-RECORD	WAQC.117	WAQC.238

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Compliance Summary Report	WAQC.320
2.	Standard Selection Statistics Report	MSIS.312 MSIS.309

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Build an internal Data Element Table (DET) from the DET. The internal DET is used for editing the 'SEL1' record and to select records.

2. Edit the Processing Options records for errors. The 'PROC' record is edited for valid date. The 'SEL1' and 'SEL2' records are edited for acceptable values and sequence. If any errors exist, error messages are written on the Standard Selection Statistics Report and processing is terminated.

3. Select Violations File (VIF) records based on the criteria established in the Processing Options SEL1 and SEL2 records.

4. Build the VIF Report Records from the Selected VIF Records and the Public Water Table (PWT).

5. Sort the VIF Report Records by the sequence of Public Water System (PWS) ID, within District, within Region, within State.

6. Produce the Compliance Summary Report. Also produce the Standard Selection Statistics Report which will contain either the selection criteria and the number of records that were selected or Processing Options error messages.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

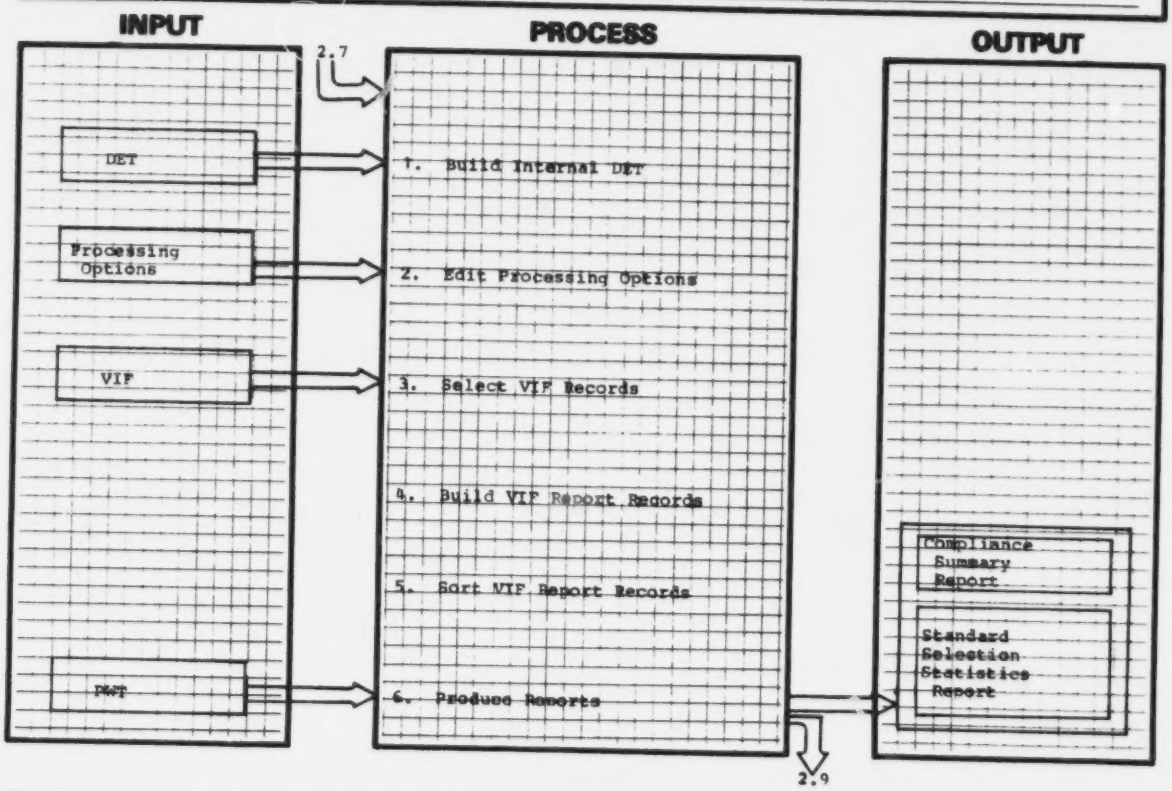
1. Processing Options
2. Selection Form--Definition of Data Elements
3. Selection Form--Definition of Logic for Selection

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 1-6-77 **Page:** 1 of 1
Diagram No.: 2.8 **Description:** Select from VIF

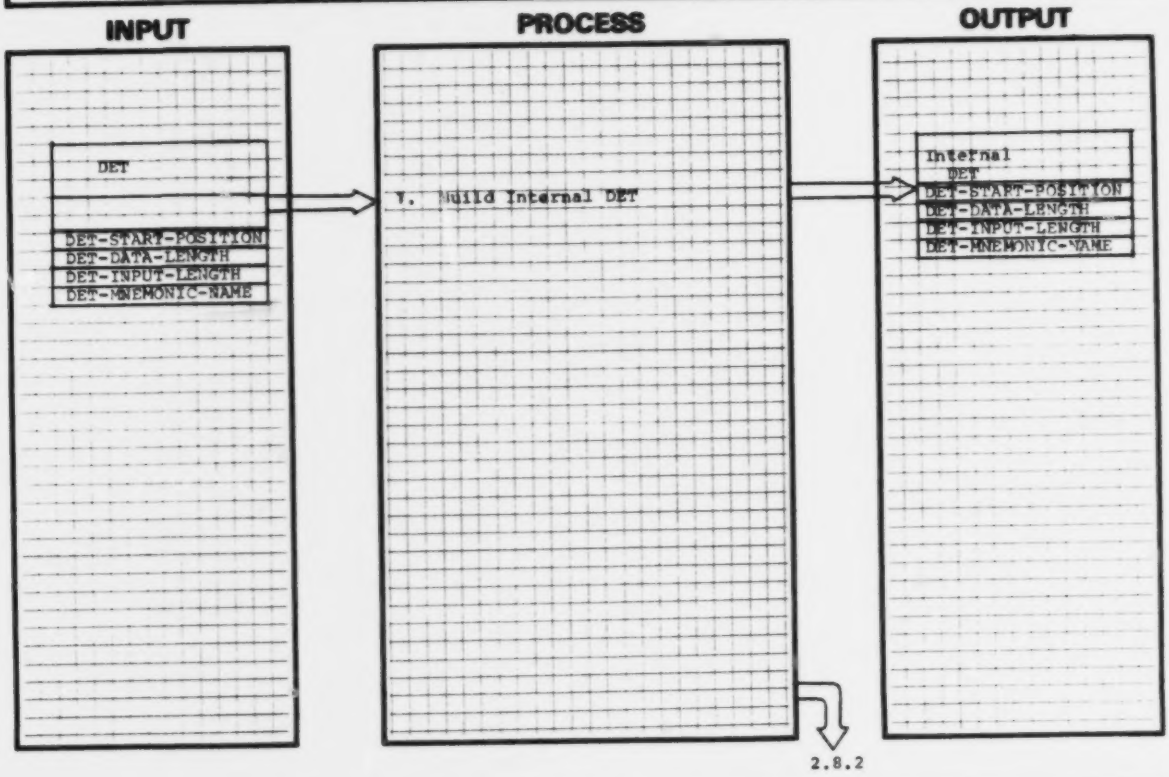


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Data Element Table (DET) from the DET.	2.8.1	WAQC125	
2	Edit the 'PROC', 'SEL1', and 'SEL2' Processing Options Records. If any Processing Options are in error, processing terminates.	2.8.2	WAQC125	
3	Select the Violations File (VIF) records using criteria established in the Processing Options 'SEL1' and 'SEL2' records.	2.8.3	WAQC125	
4	Build the VIF Report Records from the selected VIF records.	2.8.4	WAQC125	
5	Sort the VIF Report Records by an internally coded sequence.	2.8.5	WAQC125	
6	Produce the Compliance Summary Report by printing the records built in the previous step and including information from the Public Water Table (PWT). Produce the Standard Selection Statistics Report which will contain either the selection criteria and the number of records that were selected or Processing Options error messages.	2.8.6	WAQC125	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-6-77 **Page:** 1 **of** 1

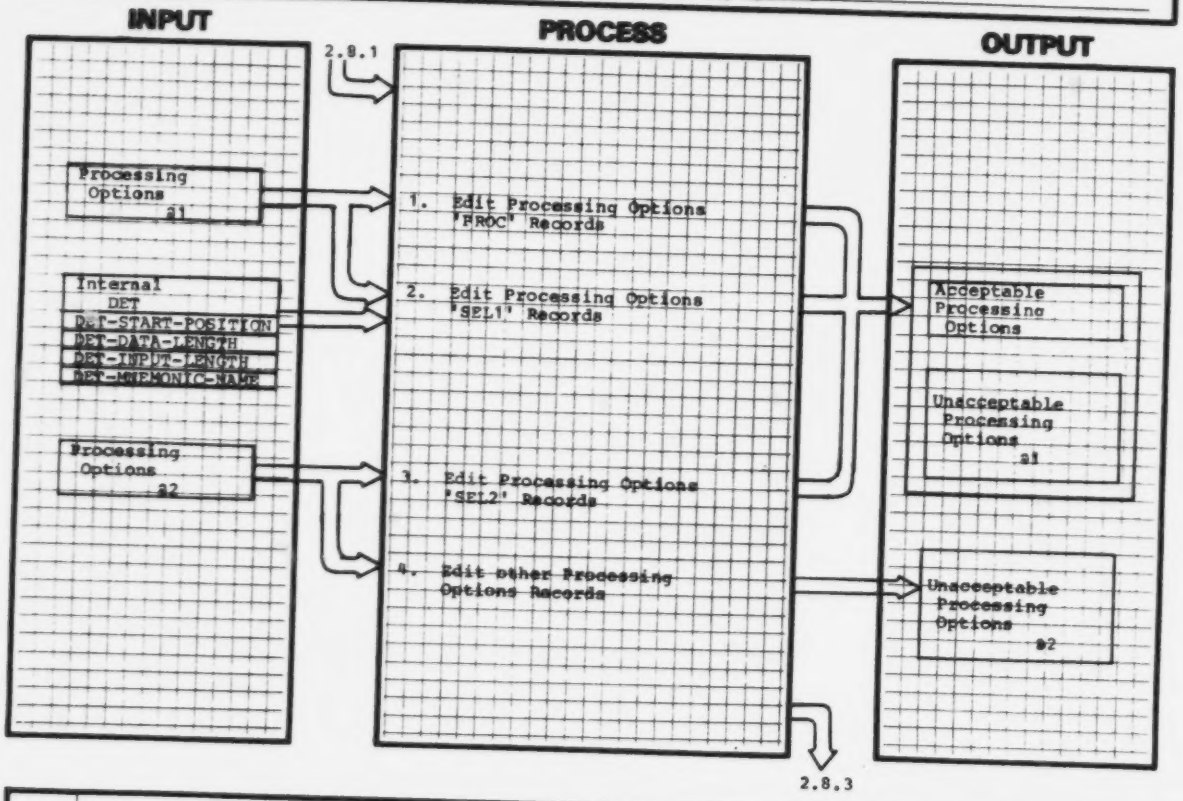
Diagram No.: 2.8.1 **Description:** Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of VI. Only the file start position, data element length, data input length, and data element mnemonic are used.		WAQC125	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 1-6-77 **Page:** 1 of 1
Diagram No.: 2.8.2 **Description:** Edit Processing Options

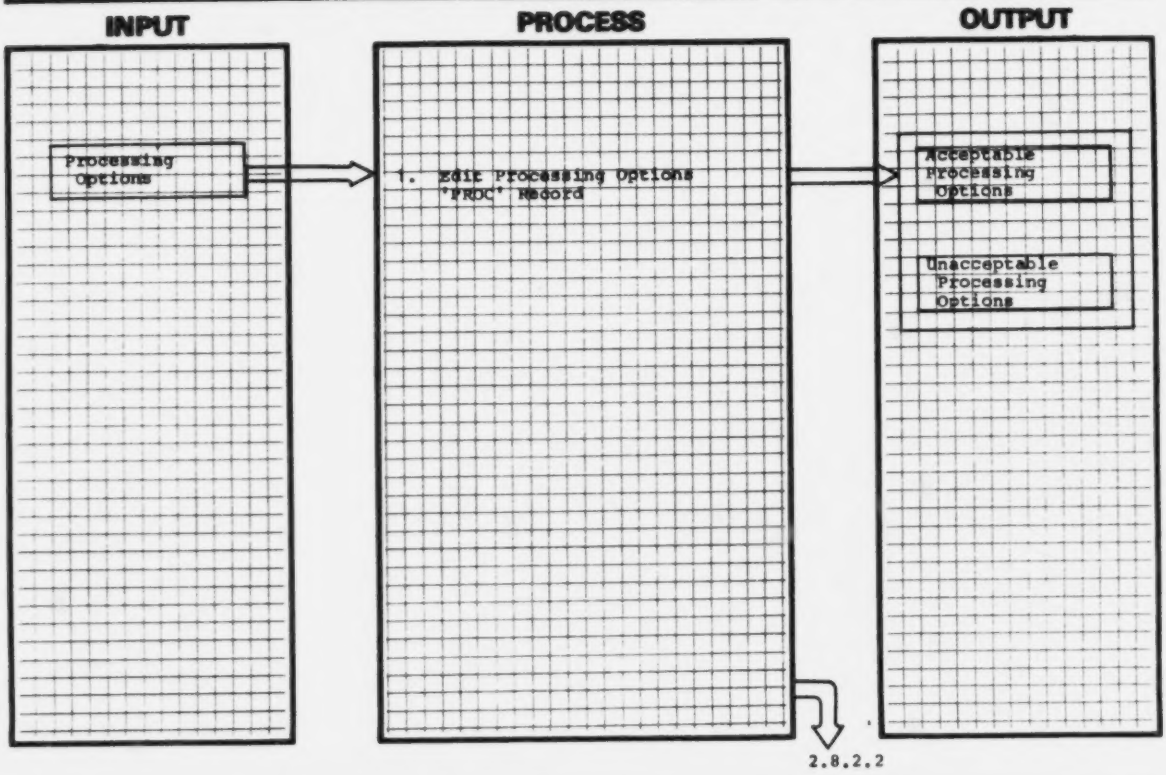


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record which has 'PROC' in the first 4 positions of the record.	2.8.2.1	WAQC125	
2	Edit the Processing Options record which has 'SEL1' in the first 4 positions of the record.	2.8.2.2	WAQC125	
3	Edit the Processing Options record which has 'SEL2' in the first 4 positions of the record.	2.8.2.3	WAQC125	
4	Edit records with other than 'PROC', 'SEL1' or 'SEL2' in the first 4 positions of the record.	2.8.2.4	WAQC125	
	NOTE: If any of the Processing Options records are in error, processing terminates after the Processing Options record(s) and associated error messages are written on the Standard Selection Statistics Report (see HIPO 2.8.6).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-6-77 Page: 1 of 1

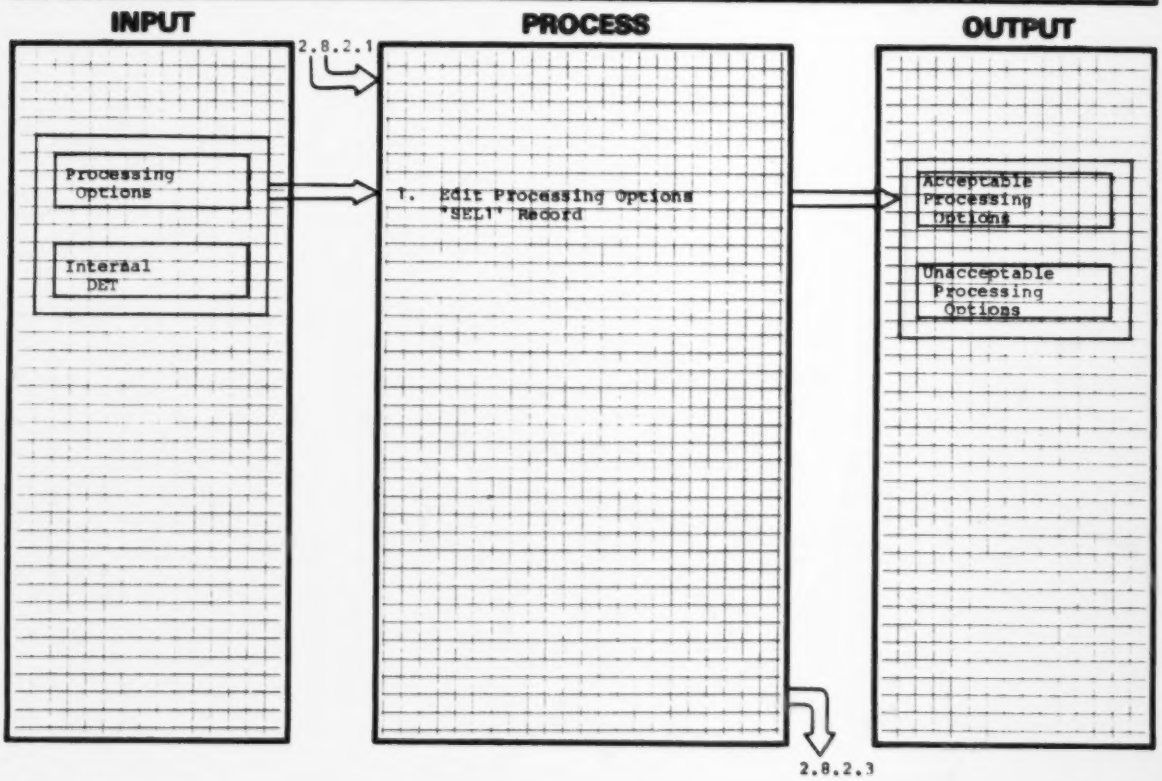
Diagram No.: 2.8.2.1 Description: Edit Processing Options 'PROC' Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Record with 'PROC' in positions 1-4 of the record. The current date must be a valid date. If not, it is an error and processing will be terminated. If no 'PROC' record exists or if more than one 'PROC' record exists, processing will also be terminated.		WAQC125	111 236

MODEL STATE INFORMATION SYSTEM

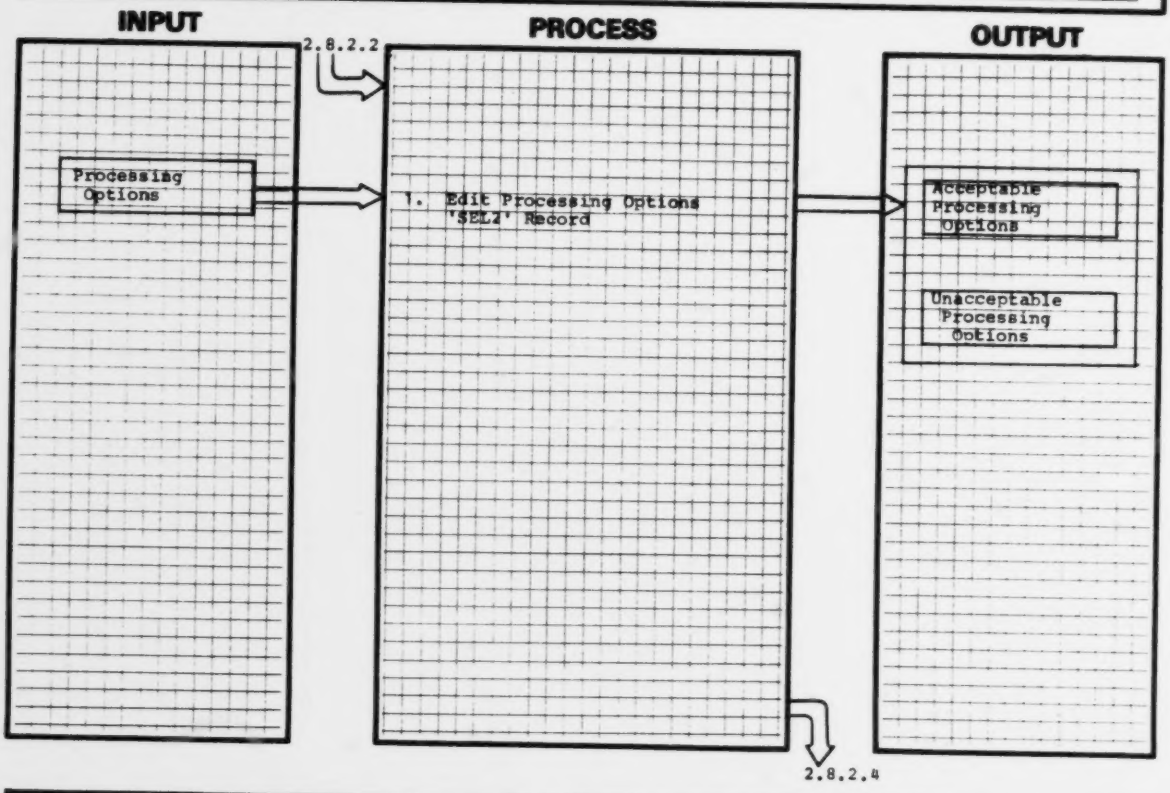
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-6-77 **Page:** 1 of 1
Diagram No.: 2.8.2.2 **Description:** Edit Processing Options 'SEL1' Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL1' in positions 1-4 of the records as follows: a. VIFI-SELECT-1-MNEMONIC, position 5-14, must equal one of the mnemonic names on the record lavout for the Violations File (VIF). This edit is hard coded into the program. b. VIFI-SELECT-1-DE-VALUE, positions 15-29, must have blanks in positions (DET-INPUT-LENGTH plus 15) to 29 where DET-INPUT-LENGTH is the length of a data element associated with the mnemonic name matched in 1.a. above. Positions 15 to (DET-INPUT-LENGTH plus 14) must be either numeric or alphanumeric as specified by the Data Element Dictionary (DED) for that particular data element. Additionally, if the data element is a date, it is checked for validity and then converted to Julian for comparison purposes. If the VIFI-SELECT-1-DE-VALUE is numeric, contains a decimal point, and the associated VIFI-SELECT-1-MNEMONIC references a decimal number (refer to the DED for these elements), then move the VIFI-SELECT-1-DE-VALUE to a 15 position alphanumeric filed for comparison purposes, placing the decimal in position 6 and replacing all blanks with zeros. c. VIFI-SELECT-1-DE-NO, positions 30-31, must be a number from 01 to 35 and must be a different number from all other 'SEL1' records. If there are no 'SEL1' records or if an error exists on any 'SEL1' record, then the record is in error and will be written on the Standard Selection Statistics Report. Appropriate error messages for the 'SEL1' Processing Options record may be found by referencing the Error Code Instructions. If any errors exist, processing will be terminated.		WAQC125	116 237 DED

MODEL STATE INFORMATION SYSTEM

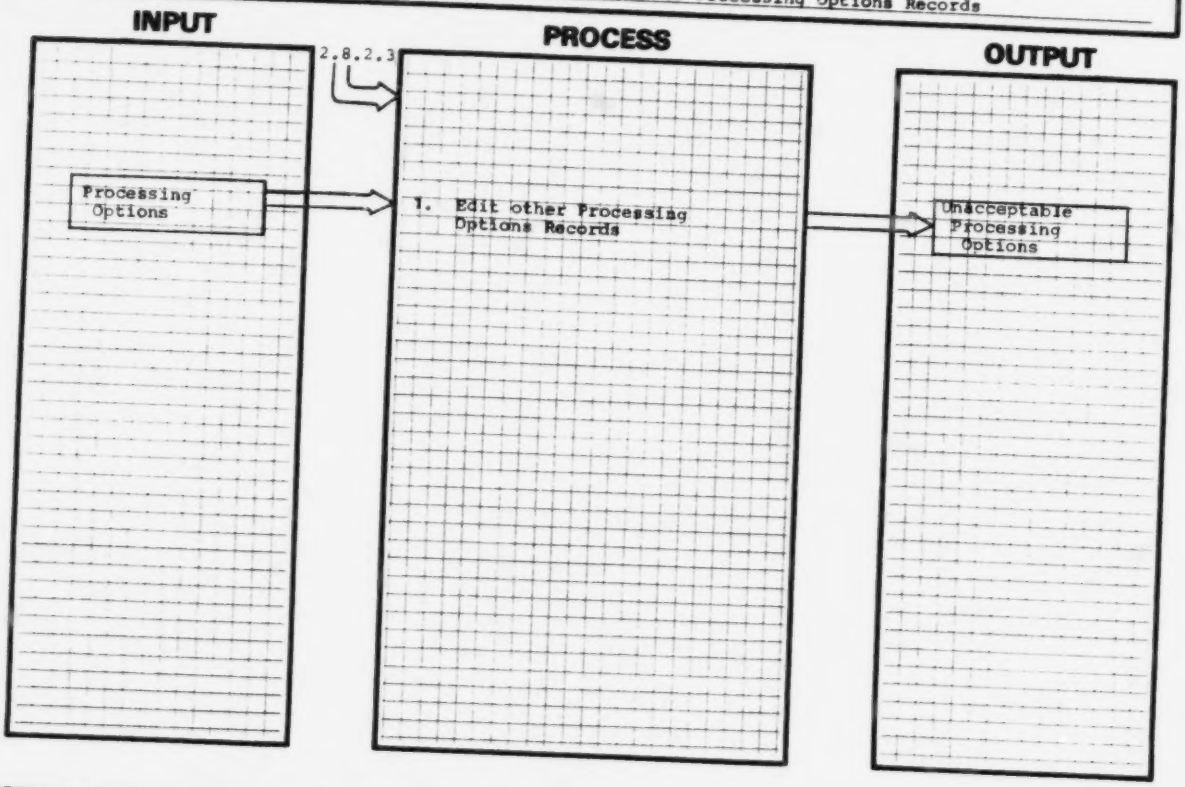
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-6-77 **Page:** 1 of 1
Diagram No.: 2.8.2.3 **Description:** Edit Processing Options 'SEL2' Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL2' in positions 1-4 of the records as follows: a. Each non-blank VIFI-SELECT-2-SYMBOL must have a corresponding 'SEL1' record, determined by VIFI-SELECT-1-DE-NO being equal to the array position of the VIFI-SELECT-2-SYMBOL being edited. In addition, the VIFI-SELECT-2-SYMBOL must equal one of the following operational symbols: LT = less than EQ = equal to GT = greater than NL = not less than NG = not greater than NX = does not exist blank NOTE: If there are more than 35 'SEL2' records, if no 'SEL2' record exists, or if an error exists on a 'SEL2', record, then the record is in error and will be written on the Standard Selection Statistics Report. If any errors exist, processing will be terminated.		WAQC125	117 238

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-6-77 **Page:** 1 **of** 1
Diagram No.: 2.8.2.4 **Description:** Edit other Processing Options Records

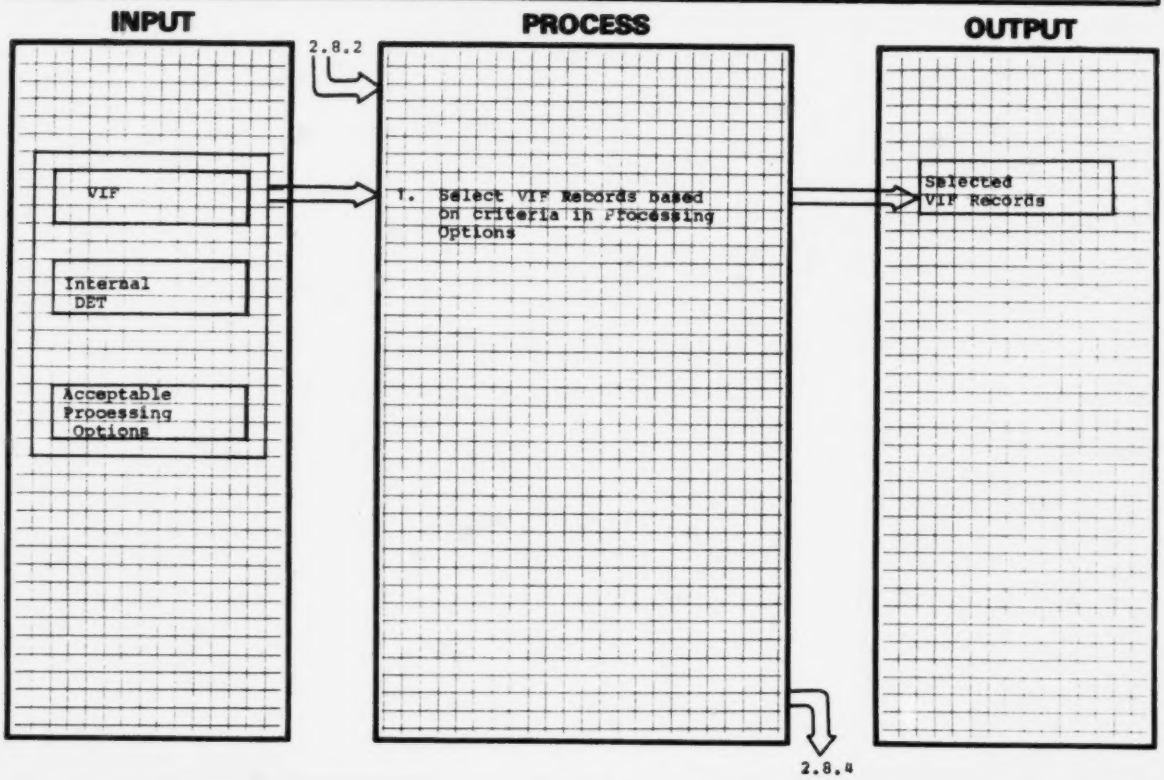


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Processing Options records with other than 'PROC', 'SEL1' or 'SEL2' in positions 1-4 of the record are in error and if any of these are encountered, processing will be terminated.		WAQC125	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-6-77 **Page:** 1 **of** 1

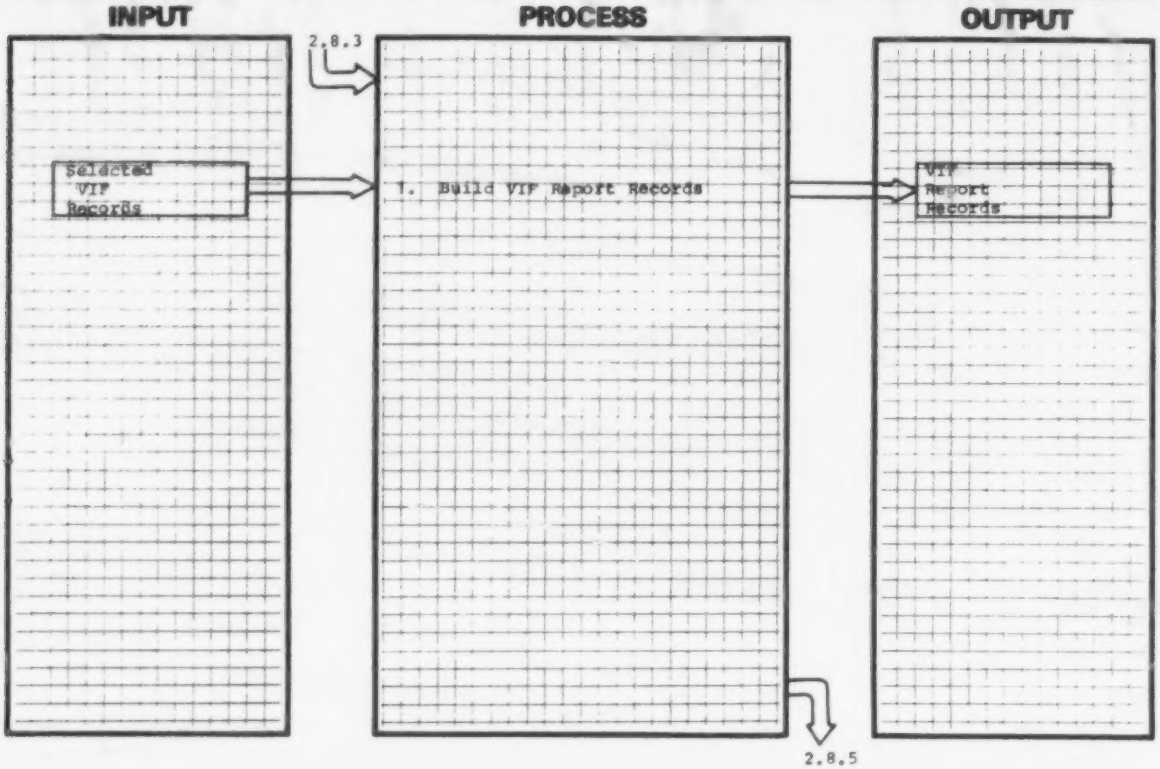
Diagram No.: 2.8.3 **Description:** Select VIF Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Read a Violations File (VIF) record. For each mnemonic name, VIFI-SELECT-1-MNEMONIC specified on the 'SEL1' records, obtain the corresponding data element value from the VIF record. If the VIFI-SELECT-1-MNEMONIC references a decimal number construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 If the VIFI-SELECT-1-MNEMONIC represents a value with multiple occurrances (maintained in an array) all such values must be obtained. If the VIFI-SELECT-1-MNEMONIC represents a value with a length greater than 15, only obtain the first fifteen positions of the value. Using those values obtained from the VIF record, examine the logic established in each 'SEL2' record to determine if the VIF record should be selected. If the Nth VIFI-SELECT-1-DE-VALUE from the 35 position array of a 'SEL2' record is non-blank then compare the appropriate value from a 'SEL1' record (VIFI-SELECT-1-DE-VALUE, where VIFI-SELECT-1-DE-NO = N) with the corresponding value (same mnemonic name) obtained from the VIF record. The comparison between these two values is made according to the Nth operational symbol (see HIPO 2.8.2.3). If there is no unique corresponding value (values exist in an array), then each value in the array must be compared until one satisfies the conditions of the comparison. If the VIF record meets all the above comparison criteria, then the VIF record is selected. Each VIF record is processed using all 'SEL2' records so that the selection counts are properly maintained.		WAQC125	255 MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 1-6-77 **Page:** 1 **of** 1
Diagram No.: 2.8.4 **Description:** Build VIF Report Records

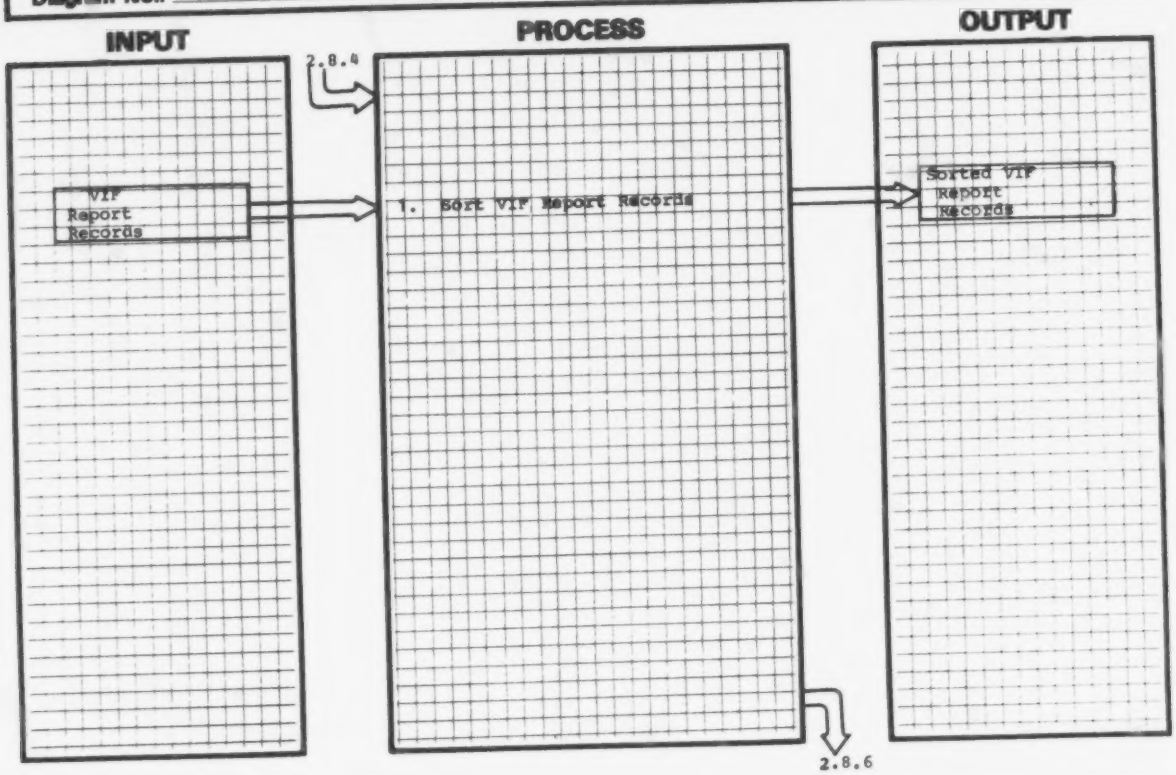


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Violations (VIF) Report Records for the Compliance Summary Report.		WAQC125	255

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-21-77 Page: 1 of 1

Diagram No.: 2.8.5 Description: Sort VIF Report Records

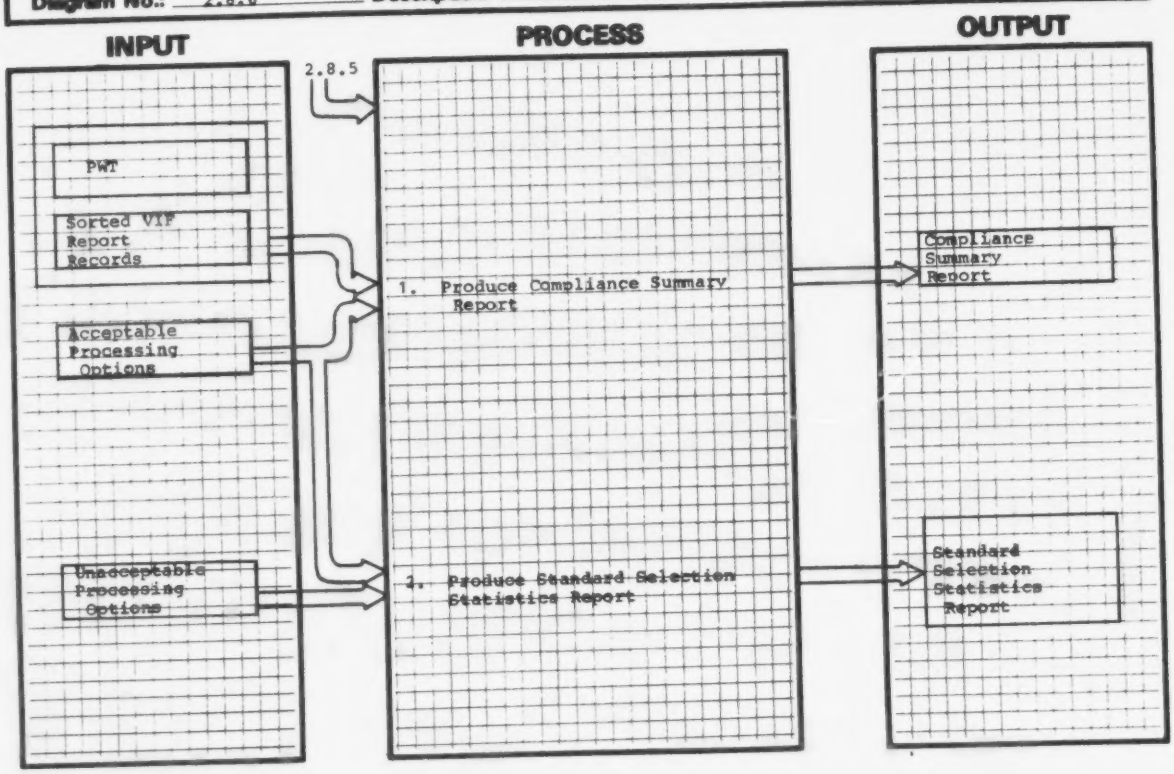


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Violations File (VIF) Report Records by the sequence of Public Water System (PWS) ID, within District, within Region, within State in ascending sequence.		WAQC125	255

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 1-25-77 Page: 1 of 1

Diagram No.: 2.8.6 Description: Produce Reports



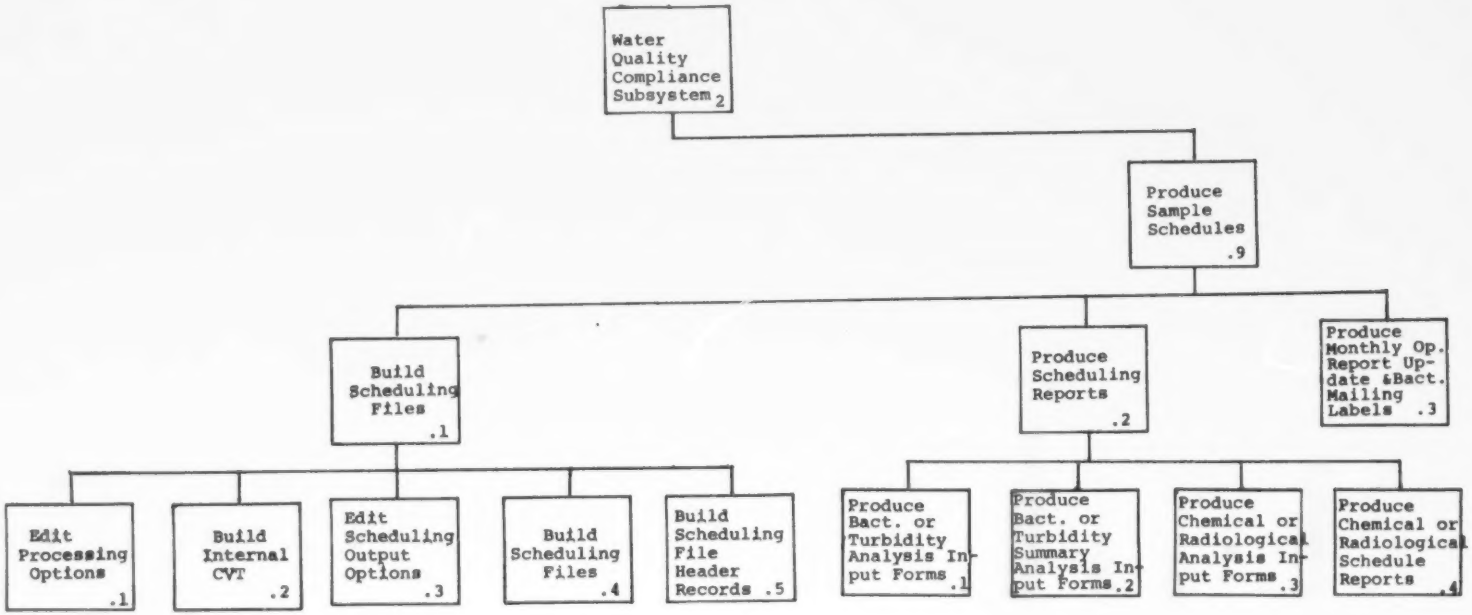
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Compliance Summary Report from the sorted Violations File (VIF) Report Records. The report breaks with each new Public Water System (PWS), PWS ID. Information about the PWS is printed on the first detail line and additional detail lines are printed for each different Violation ID for that PWS. The result field will be converted from absolute values to decimal values using the value in the decimal place indicator for the field. For example, if VIP-ANALYSIS-RESULT equals 12345 and VIF-ANALYSIS-DECIMALS equals 2, then the field on the report would be 123.45. Convert all Julian dates, (YYDDD), to calendar dates, (MMDDYY), before printing. Totals for each PWS are printed after the detail lines followed by a skip to the top of the next page. The PWT-MAILING-STATE and PWT-PLANT-COMPLIANCE-CYCLE are extracted from the Public Water Table (PWT) to be used in the Compliance Summary Report.		WAQC125	255 320 PWSI. 201 PWSI. 234
2	The Standard Selection Statistics Report is always produced. The following two formats may be used: a. The Standard Selection Statistics Report will contain: (1) The selection criteria (2) The total records selected under each selection criteria (3) The total of all records selected for the report (4) The percent of the file selected. b. If any Processing Options are in error, the records and associated error messages are produced instead of or in addition to the information in a..		WAQC125	MSIS. 309 MSIS. 312

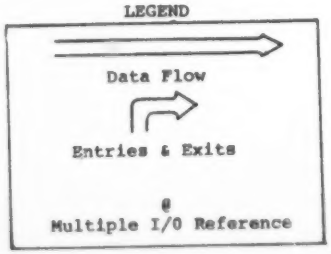
Subsystem: Water Quality Compliance

Description: Produce Sample Schedules

Diagram Type: VTOC

Diagram Number: 2.9


Water Quality Compliance Subsystem 2
Produce Sample Schedules .9
Build Scheduling Files .1
Produce Scheduling Reports .2
Produce Monthly Op. Report Update &Bact. Mailing Labels .3
Edit Processing Options .1
Build Internal CVT .2
Edit Scheduling Output Options .3
Build Scheduling Files .4
Build Scheduling File Header Records .5
Produce Bact. or Turbidity Analysis Input Forms .1
Produce Bact. or Turbidity Summary Analysis Input Forms .2
Produce Chemical or Radiological Analysis Input Forms .3
Produce Chemical or Radiological Schedule Reports .4



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2.9.1 Build Scheduling Files
2.9.1.1 Edit Processing Options
2.9.1.2 Build Internal Code Value Table (CVT)
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2.9.1.4 Build Scheduling Files
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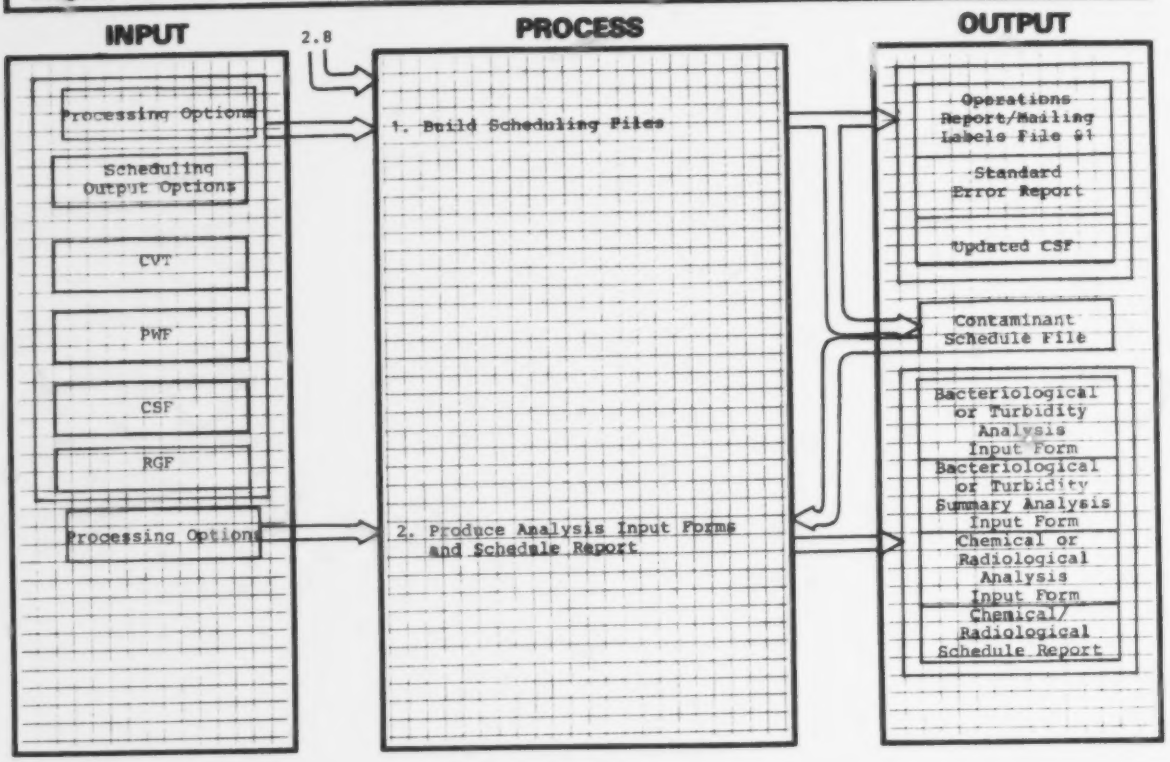
2.9.2.1 Produce Bacteriological or Turbidity Analysis Input Forms
2.9.2.2 Produce Bacteriological or Turbidity Summary Analysis Input Forms
2.9.2.3 Produce Chemical or Radiological Analysis Input Forms
2.9.2.4 Produce Chemical or Radiological Schedule Reports
2.9.3 Produce Monthly Operations Report Update Forms and Bacteriological Mailing Labels

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-21-77 **Page:** 1 of 2

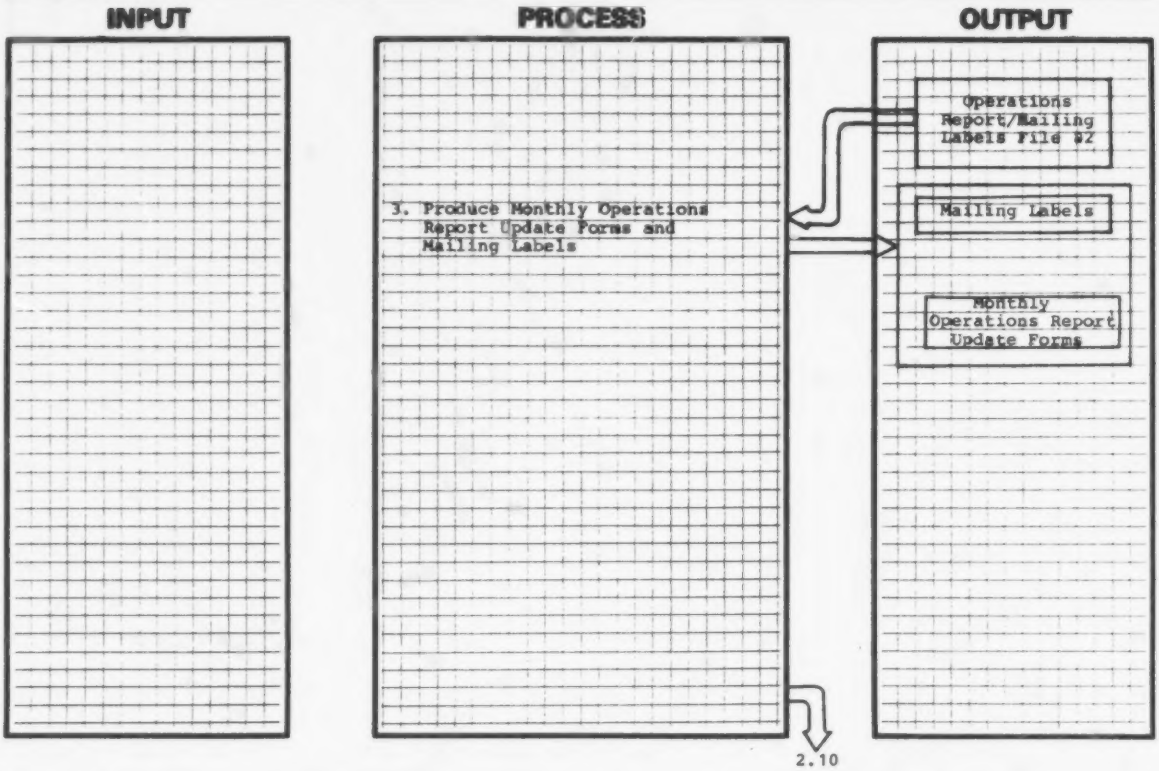
Diagram No.: 2.9 **Description:** Produce Sample Schedules



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Scheduling Files (the Contaminant Schedule File and the Operations Report/Mailing Labels File) from the information contained in the Code Value Table (CVT), the Public Water File (PWF), the Compliance Status File (CSF), and the Regulations File (RGF) as determined by the Processing Options and the Scheduling Output Options.	2.9.1	WAQC130	
2	Produce the Analysis Input Forms (the Bacteriological or Turbidity Analysis Input Form, the Bacteriological or Turbidity Summary Analysis Input Form, and the Chemical or Radiological Analysis Input Form) and the Chemical/Radiological Schedule Report from the information contained in the Contaminant Schedule File from Step 1, and from the Processing Options.	2.9.2	WAQC140 WAQC150 WAQC170 WAQC180	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-5-77 **Page:** 2 **of** 2
Diagram No.: 2.9 **Description:** Produce Sample Schedules



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	Produce the Monthly Operations Report Update Forms and Mailing Labels from the Operations Report/Mailing Labels File from Step 1.	2.9.3	WAQC200	

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC130
DATE: March 16, 1977

I. OBJECTIVES:

The objective of this program is to schedule the Public Water Systems (PWS's) for sampling by building files containing records used to produce Analysis Input Form Turnaround Documents, Monthly Operations Report Update Forms, and Bacteriological Mailing Labels.

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Code Value Table	CVT-RECORD		MSIS.206
2.	Public Water File	PWF-RECORD		PWSI.200
3.	Compliance Status File	CSF-RECORD		WAQC.257
4.	Regulations File	RGF-CHEM-RECORD		REGS.250
		RGF-TURB-RECORD		REGS.251
		RGF-BPOP-RECORD		REGS.252
		RGF-BACT-RECORD		REGS.253
		RGF-EMIT-RECORD		REGS.255
		RGF-ALFA-RECORD		REGS.256
		RGF-BETA-RECORD		REGS.257
5.	Scheduling Output Options	SAFI-OPT-SCHED-RECORD	WAQC.124	WAQC.245

B. PROCESSING OPTIONS RECORD:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	SAFI-PROC-SCHED RECORD	WAQC.114	WAQC.244

III. OUTPUTS:

A. RECORD LAYOUTS:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Contaminant Schedule File	SAFI-HEDR-SCHED-RECORD	WAQC.219
		SAFI-SCHED-RECORD	WAQC.220

2.	Operations Report/ Mailing Label File	SAFI-CARD-LABEL-RECORD	WAQC.242
		SAFI-HEDR-CARD-LABEL-RECORD	WAQC.243
3.	Compliance Status File	CSF-RECORD	WAQC.257

B. REPORT LAYOUTS:

	NAME	EXHIBIT LAYOUT
1.	Standard Error Report	MSIS.309

C. TURNAROUND DOCUMENTS:

Not Applicable

IV. FUNCTIONS:

1. Edit the Processing Options records for errors. Errors are produced on the Standard Error Report and will cause processing to terminate.

2. Build an Internal Code Value Table (CVT), from information in the CVT, to be used in providing the Contaminant Name for the Scheduling Files.

3. Edit the Scheduling Output Options for syntax errors. Errors are produced on the Standard Error Report.

4. Build the Scheduling Files (Contaminant Schedule File and Operations Report/Mailing Labels File) from the Scheduling Output Options as edited against information on the Public Water File (PWF), the Compliance Status File (CSF), and the Regulations File (RGF). Errors are produced on the Standard Error Report. The CSF is updated during this scheduling processing.

5. Build the Scheduling File Header Records based on the results of the scheduling process above.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

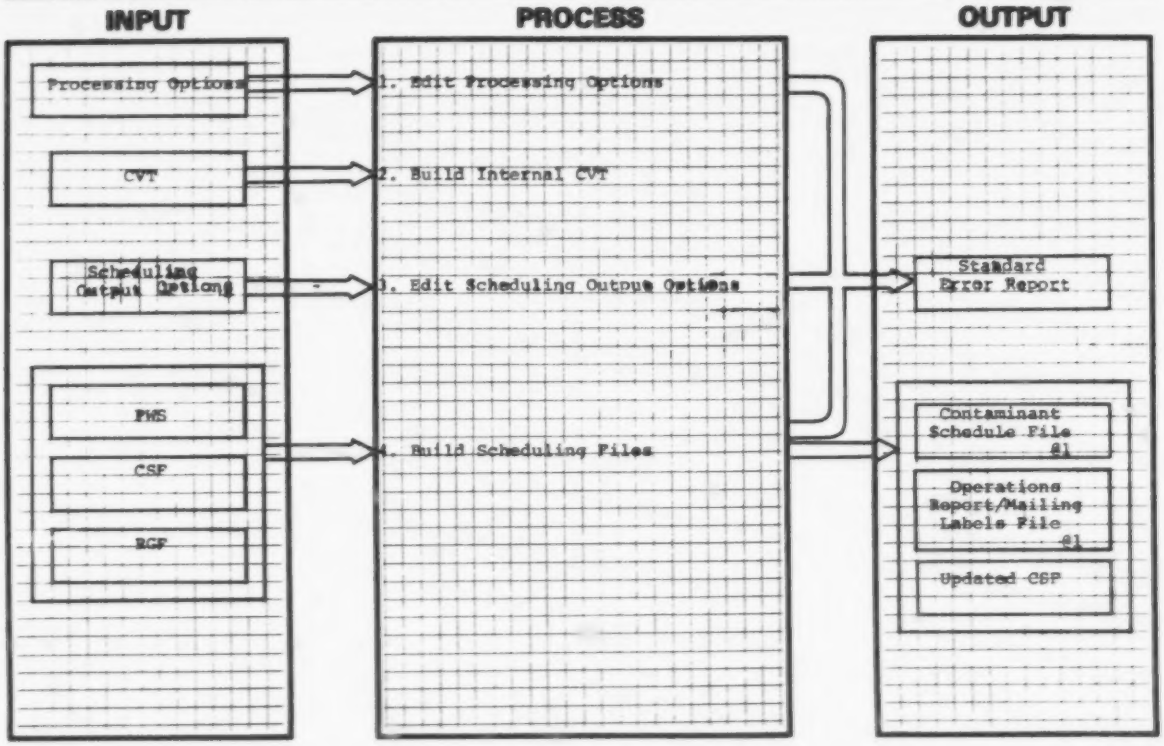
1. Processing Options
2. Scheduling Output Options

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 of 2
Diagram No.: 2.9.1 **Description:** Build Scheduling Files

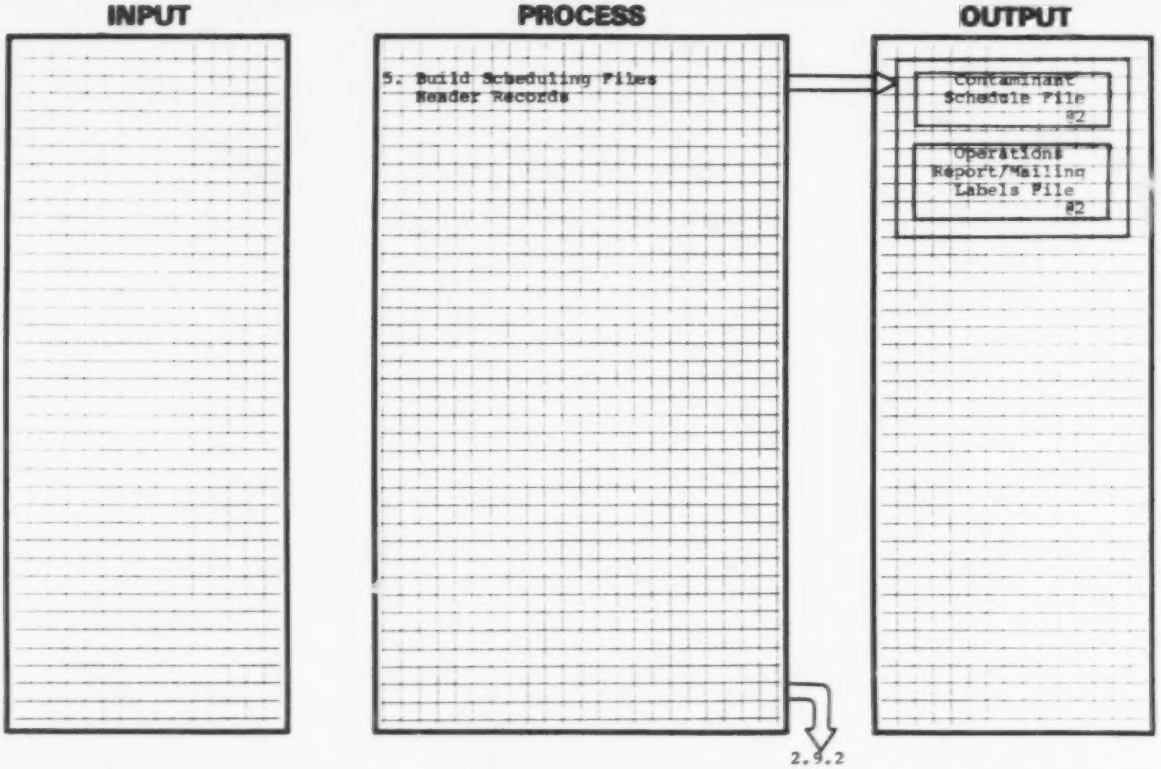


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options. Errors are produced on the Standard Error Report.	2.9.1.1	WAQC130	
2	Build an Internal Code Value Table (CVT), from information in the CVT, to be used in providing the Contaminant Name for the Scheduling Files.	2.9.1.2	WAQC130	
3	Edit the scheduling Output Options for syntax errors. Errors are produced on the Standard Error Report.	2.9.1.3	WAQC130	
4	Build the Scheduling Files (Contaminant Schedule File and Operations Report/Mailing Labels File) from the scheduling Output Options, passed from Step 3 as edited against information on the Public Water File (PWF), the Compliance Status File (CSF) and the Regulations File (RGF). Errors are produced on the Standard Error Report. The CSF is updated during this scheduling process.	2.9.1.4	WAQC130	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 2 of 2

Diagram No.: 2.9.1 **Description:** Build Scheduling Files

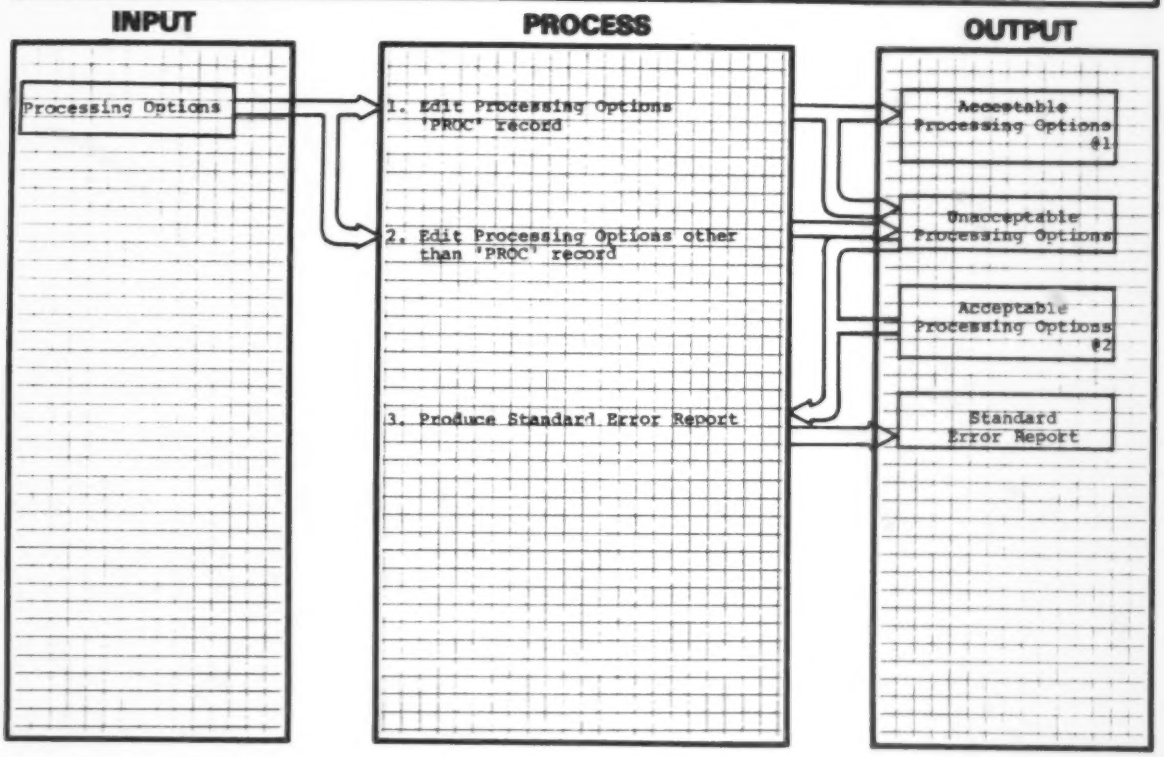


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
5	Build the Scheduling Files Header Records based on the result of the scheduling process, Step 4.	2.9.1.5	WAQC130	
	NOTE: After the program is finished, the two Scheduling files are sorted in order to move the header record to the front of each file, before the files are used by the report programs, WAQC140 through WAQC200.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 of 1

Diagram No.: 2.9.1.1 **Description:** Edit Processing Options

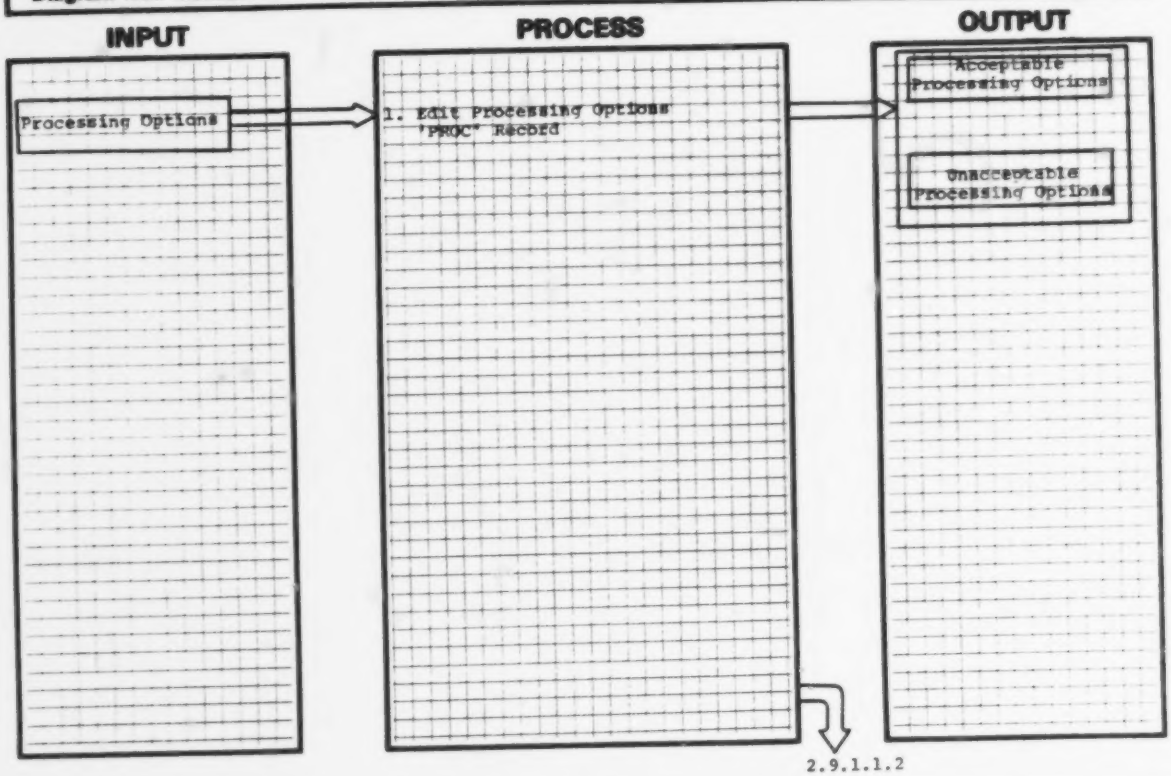


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record which has 'PROC' in the first four positions of the record.	2.9.1.1.1	WAQC130	
2	Edit the Processing Options records which do not have 'PROC' in the first four positions of the record. If found, they are in error.	2.9.1.1.2	WAQC130	
3	Produce the Standard Error Report indicating whether or not the Processing Options were in error; and, if so, what the errors were.	2.9.1.1.3	WAQC130	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 **of** 1

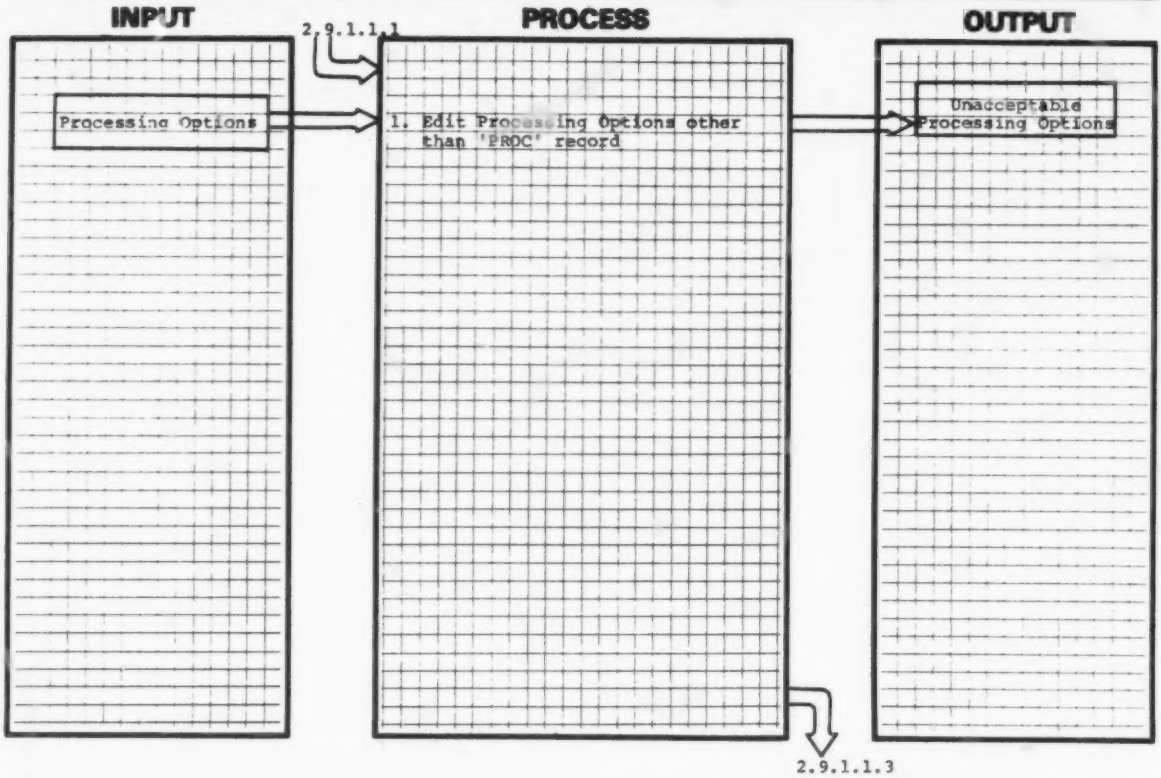
Diagram No.: 2.9.1.1.1 **Description:** Edit Processing Options 'PROC' Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'PROC' in position 1-4 of the record as follows: a) Processing date (SAFI-PROC-DATE) must be a valid date. If it is invalid, move message 'ERROR-PROC RECORD CONTAINS AN INVALID DATE' to error message area. If it is valid, convert to Julian mode for later use. b) Rerun Option (SAFI-PROC-RERUN) must be 'Y' or 'N', If it is invalid, move message 'ERROR PROC RECORD CONTAINS INVALID RERUN OPTION CODE' to error message area. c) Monthly Operations Report Option (SAFI-PROC-OPER-REPT) must be 'Y', 'N', or blank. If it is invalid, move message 'ERROR-PROC RECORD CONTAINS INVALID MONTHLY OPERATIONS REPORT OPTION CODE' to error message area. If blank or invalid, use a default value of 'N'. NOTE: If errors are detected in 1.c above, processing will continue with the default values; however, if errors are detected in 1.a or 1.b above, processing will be terminated after editing the remaining Processing Options records. If more than one 'PROC' record exists, processing will be terminated. Unacceptable Processing Options records and associated error messages are produced on the Standard Error Report.		WAQC130	114 244 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 **of** 1
Diagram No.: 2.9.1.1.2 **Description:** Edit Processing Options other than 'PROC record

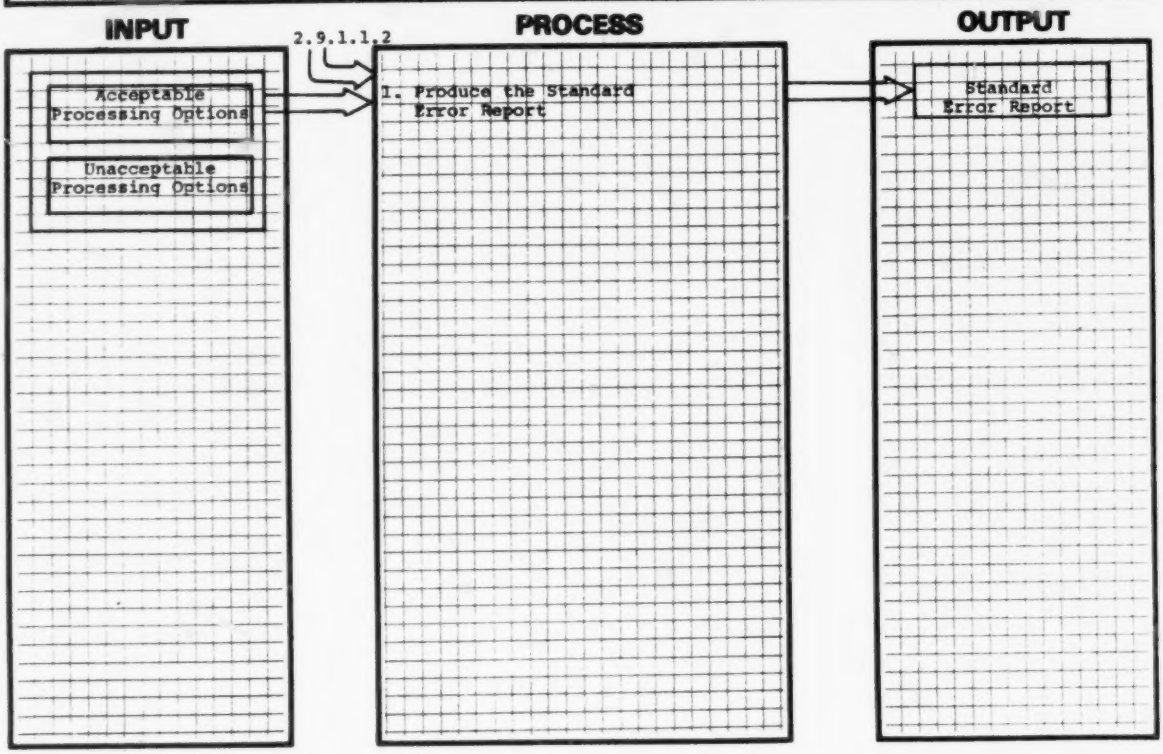


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records for other than 'PROC' in positions 1-4 of the record. If found, the message 'ERROR-RECORD TYPE NOT PROC' is moved to the message area.		WAQC130	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 **of** 1

Diagram No.: 2.9.1.1.3 **Description:** Produce Standard Error Report

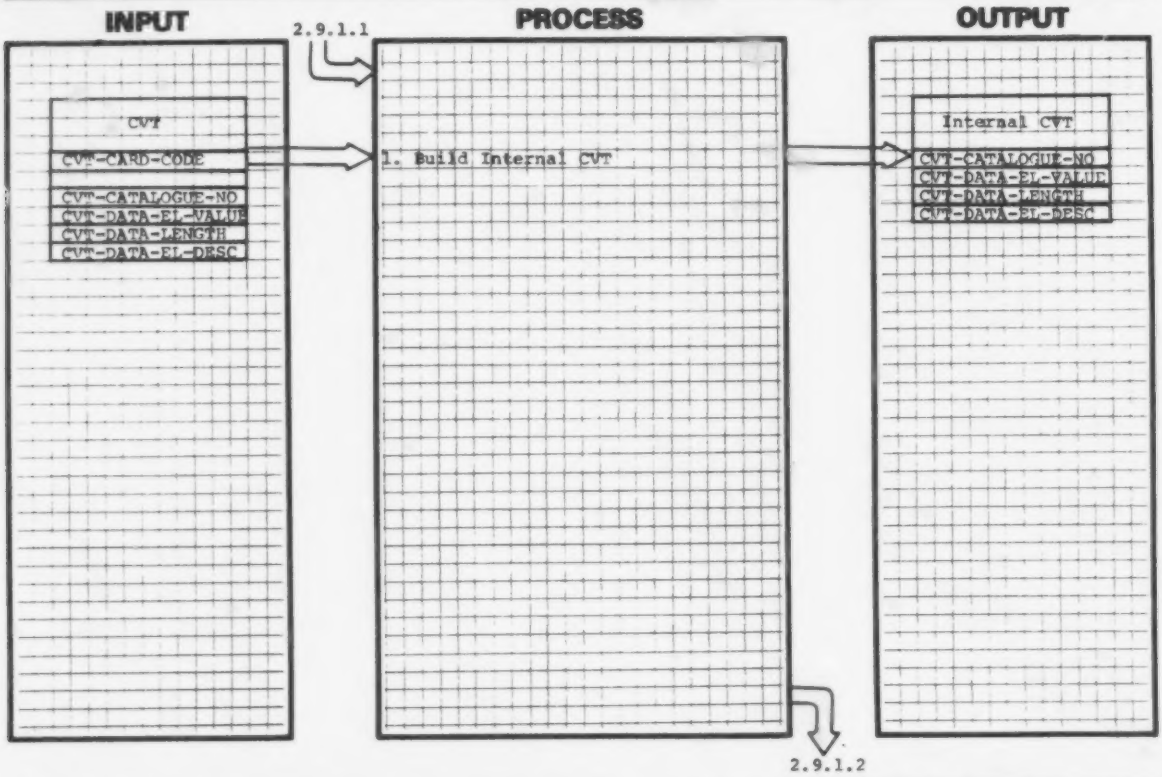


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Error Report is produced indicating whether or not the Processing Options were in error and, if so, what the errors were. If the Processing Options records were not in error, a message to this effect is produced and processing continues. If any of the Processing Options records were in error, the record and associated error messages are produced and processing is terminated.		WAQC130	MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 **of** 1

Diagram No.: 2.9.1.2 **Description:** Build Internal CVT

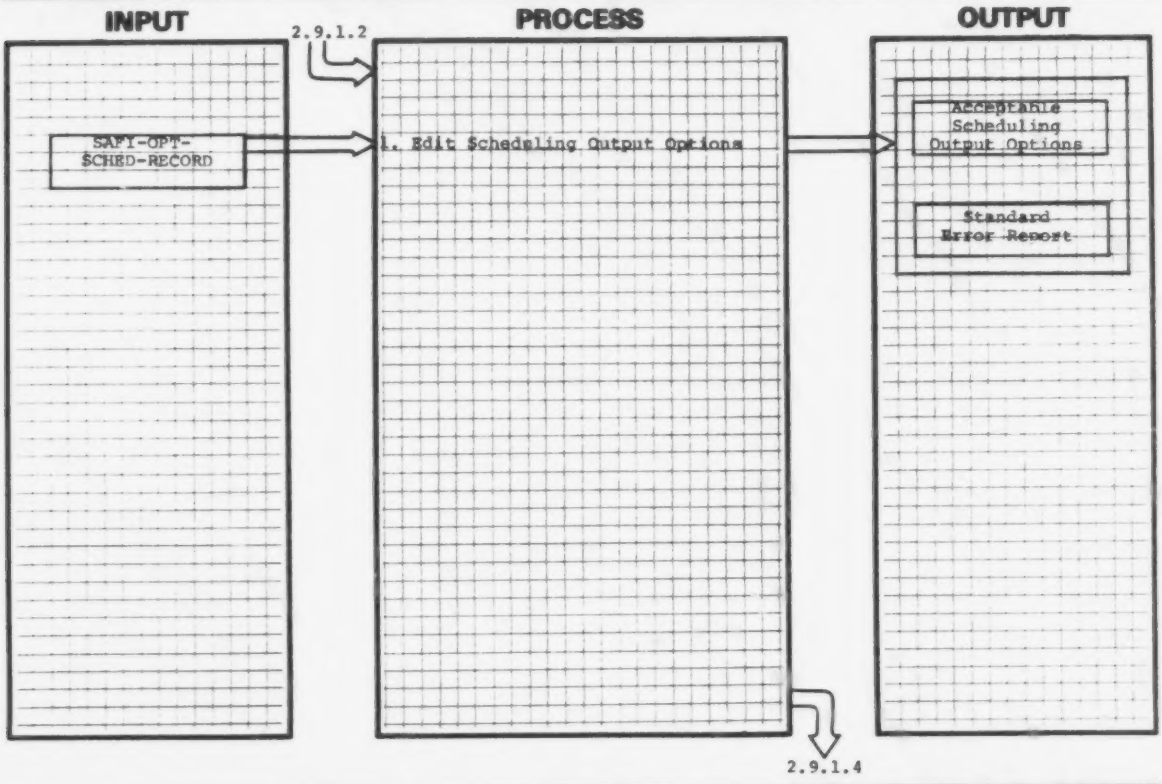


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of data element edit values. Appropriate records are stored in an internal CVT to be used as edit criteria when certain fields are verified. These edit values are contained in the common CVT having a file ID of 'MS'. Only values and names for the Contaminant ID are obtained from this common file.		MAQC130	MSIS. 206 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 9-30-77 **Page:** 1 of 2

Diagram No.: 2.9.1.3 **Description:** Edit Scheduling Output Options

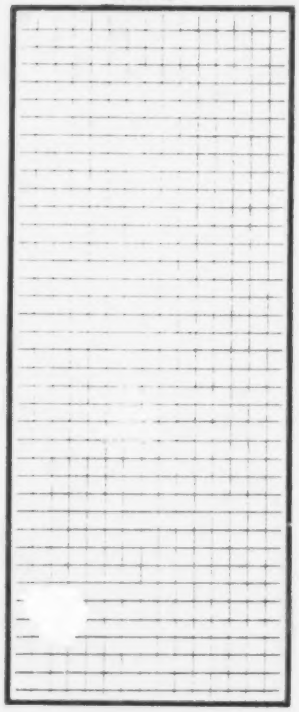


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit scheduling Output Options records (SAFI-OPT-SCHED RECORD) for syntax errors as follows: a) SAFI-O-S-PWS-ID must be numeric with acceptable values in the range of 0000001 to 9999999. If it is invalid, write a message. b) SAFI-O-S-BACT must be blank, 'Y', or 'N'. If it is invalid, write a message. If blank, a default value of 'N' is assumed. c) Edit SAFI-O-S-TURBIDITY in the same manner as 1.b above. d) Edit SAFI-O-S-CHEM in the same manner as 1.b above. e) Edit SAFI-O-S-RADS-NATURAL in the same manner as 1.b above. f) Edit SAFI-O-S-RADS-MAN-MADE in the same manner as 1.b above. g) SAFI-O-S-LABELS-OPTION must be 'S','A','P','N', or blank. If invalid, write a message. If blank, a default value of 'N' is assumed. h) SAFI-O-S-LABELS-NUMBER must be numeric within the range of 00 to 99, or blank. If invalid, write a message. i) Edit SAFI-O-S-RESCHED-CHEM in the same manner as 1.b above. j) Edit SAFI-O-S-RESCHED-RADS in the same manner as 1.b above.		WAQC130	245 MSIS. 309

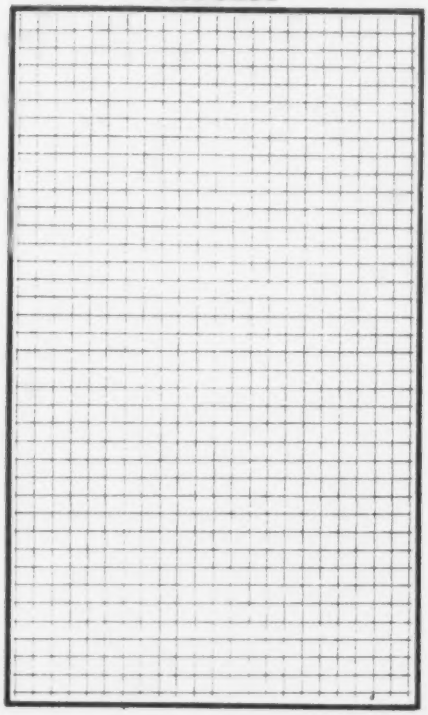
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 2 **of** 2
Diagram No.: 2.9.1.3 **Description:** Edit Scheduling Output Options

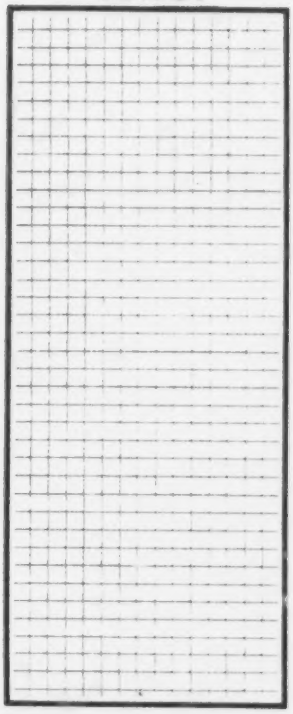
INPUT



PROCESS



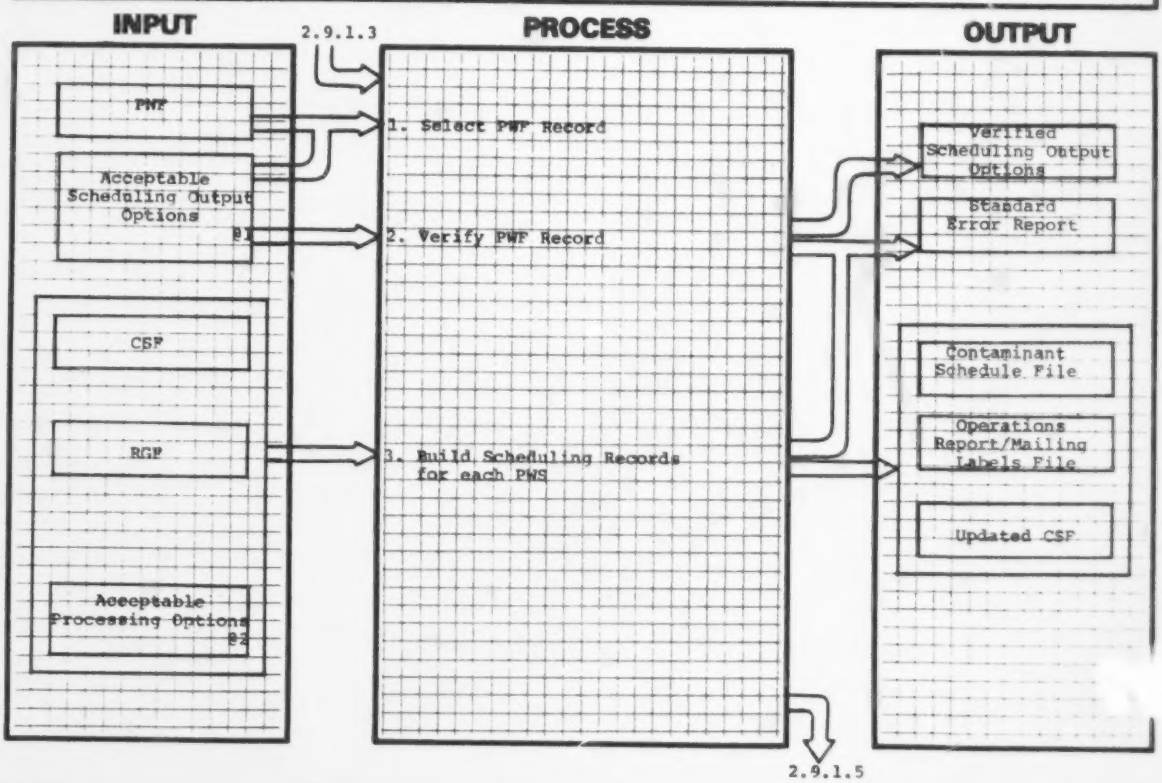
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	...inations of 1.b through 1.j can also be in error as follows: k) If none of the fields 1.b through 1.f are 'Y', write a message. l) If 1.g is blank or 'N' and 1.h is not blank or '00', write a message. m) 1.g is 'P' and 1.h is blank or '00', write a message. NOTE: The error messages are written to the Standard Error Report. Any error (1.a through 1.g) will cause the Scheduling Output Option record to be rejected.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 of 1
Diagram No.: 2.9.1.4 **Description:** Build Scheduling Files

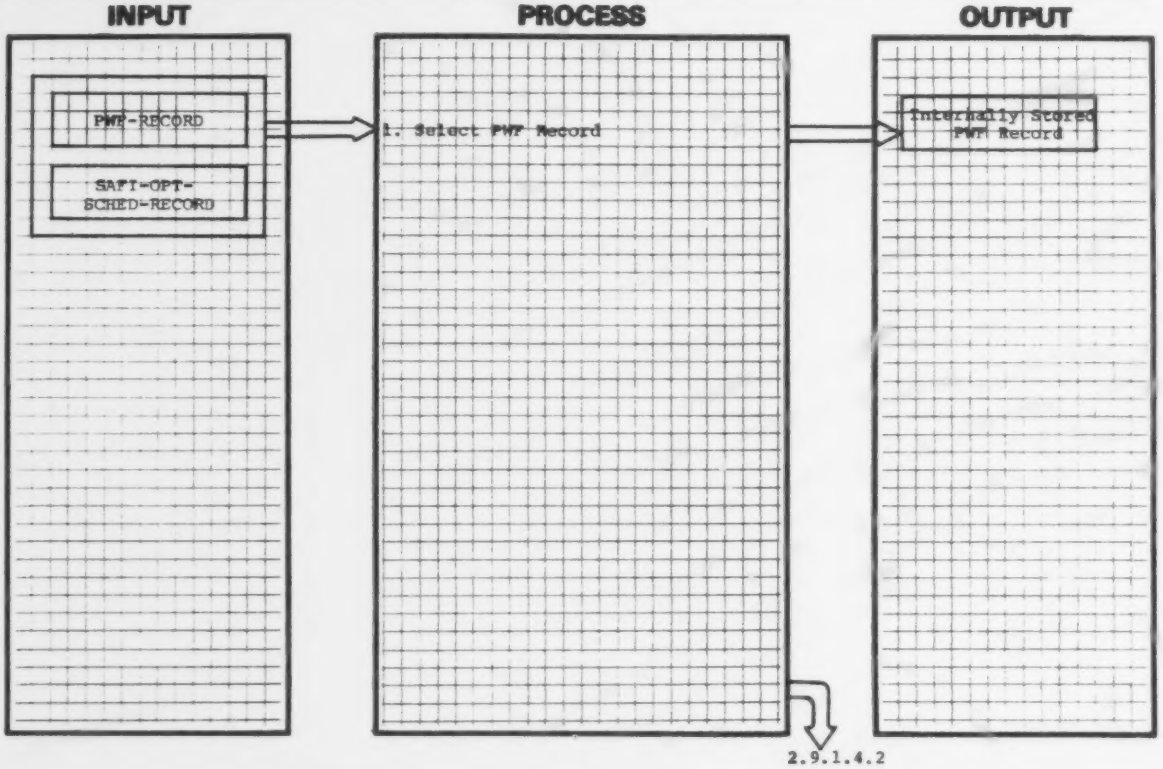


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) record for scheduling processing and store internally for later use.	2.9.1.4.1	WAQC130	
2	Verify the Public Water File (PWF) record against information in the Acceptable Scheduling Output Options and the Acceptable Processing Options. If no errors are detected, the Acceptable Scheduling Output Option record becomes a Verified Scheduling Output Record. Otherwise, the Acceptable Scheduling Output record is dropped and error messages are produced on the Standard Error Report.	2.9.1.4.2	WAQC130	
3	Build the Scheduling Records (Contaminant Schedule File and Operations Report/Mailing Labels File) for each Public Water System (PWS) based on information in the Compliance Status File (CSF), the Regulations File (RGF), and the Acceptable Processing Options. Errors due to conflicts between Scheduling Output Options and information on the PWF, the CSF, or the RGF are produced on the Standard Error Report. The CSF is updated during this scheduling process.	2.9.1.4.3	WAQC130	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 **of** 1

Diagram No.: 2.9.1.4.1 **Description:** Select PWF Record

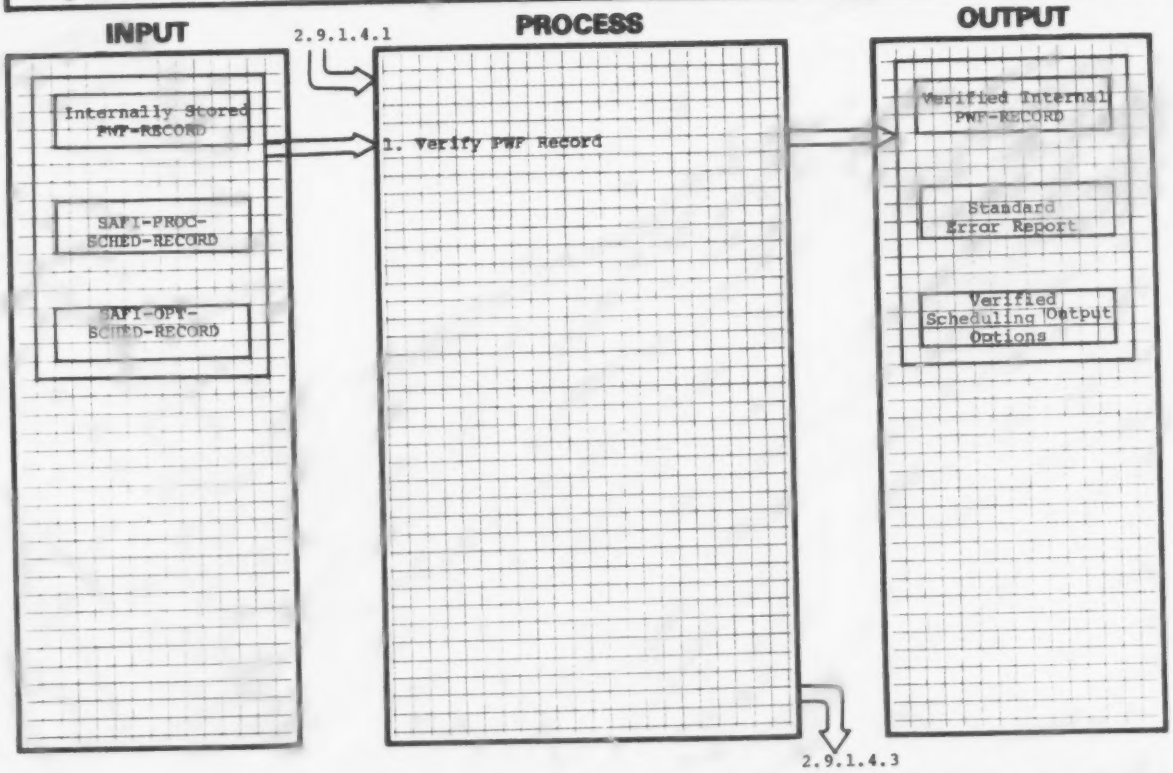


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water File (PWF) record and store internally. This record will be used later to verify the Acceptable Scheduling Output Options records and to help determine the contaminants to be scheduled for those Public Water Systems (PWS's) whose PWF-ID's from the PWF match the PWS-ID from the SAFI-OPT-SCHED-RECORDS.		MAQC130	245 PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 **of** 1

Diagram No.: 2.9.1.4.2 **Description:** Verify PWF Record

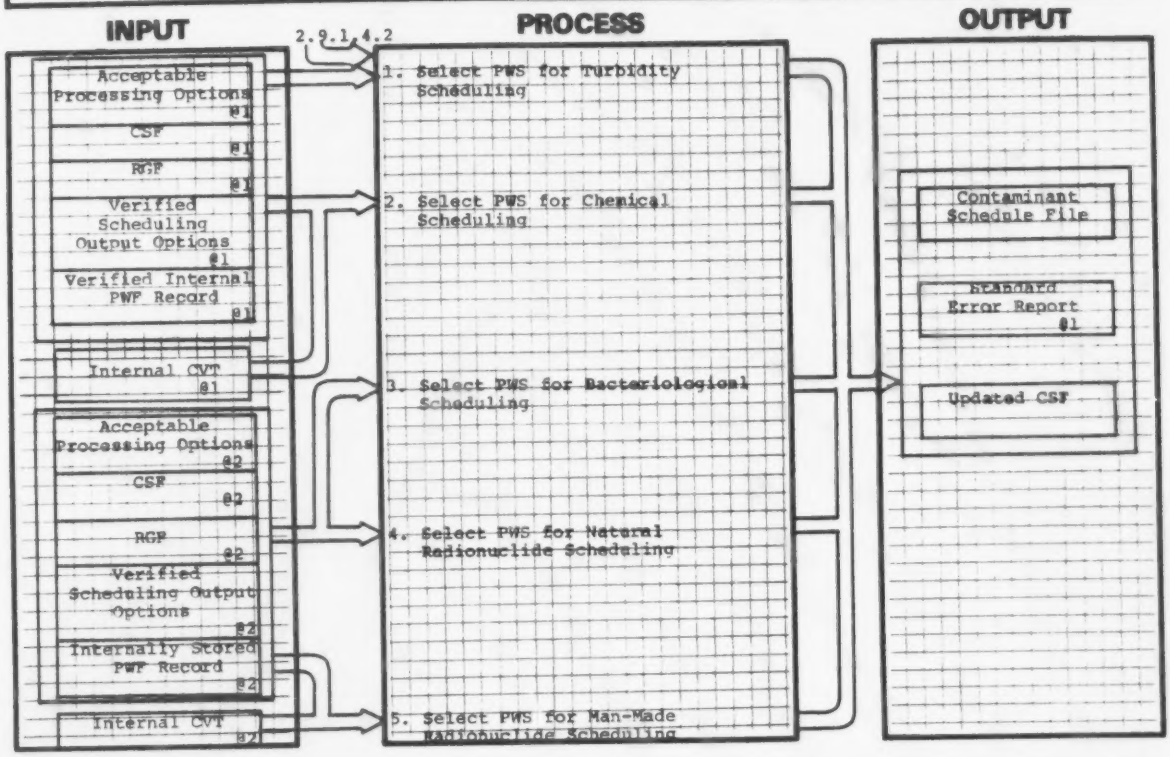


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the internallly stored PWF-RECORD against information in the Acceptable Scheduling Output Options, SAFI-OPT-SCHED-RECORD, and in the Acceptable Processing Options, SAFI-PROC-SCHED-RECORD, by checking for the following situations. a) Inactive PWS (PWS-PLANT-ACTIVITY='I'). b) Consecutive PWS not required to monitor (PWF-PLANT-CONSEC-INDICATOR = '1'). c) PWS regulated by neither Federal or State regulations (PWF-REGULATED-BY='N'). d) PWS begin date (PWF-PLANT-BEGIN-DATE) greater than processing date (SAFI-PROC-DATE). If any of the above situations are in effect, produce a message on the Standard Error Report indicating that the Public Water System (PWS) will not be scheduled and which of the above (1.a through 1.e) apply. For details, see Appendix III.B.2		WAQC130	244 PWSI. 200 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 of 2

Diagram No.: 2.9.1.4.3 **Description:** Build Scheduling Records for each PWS

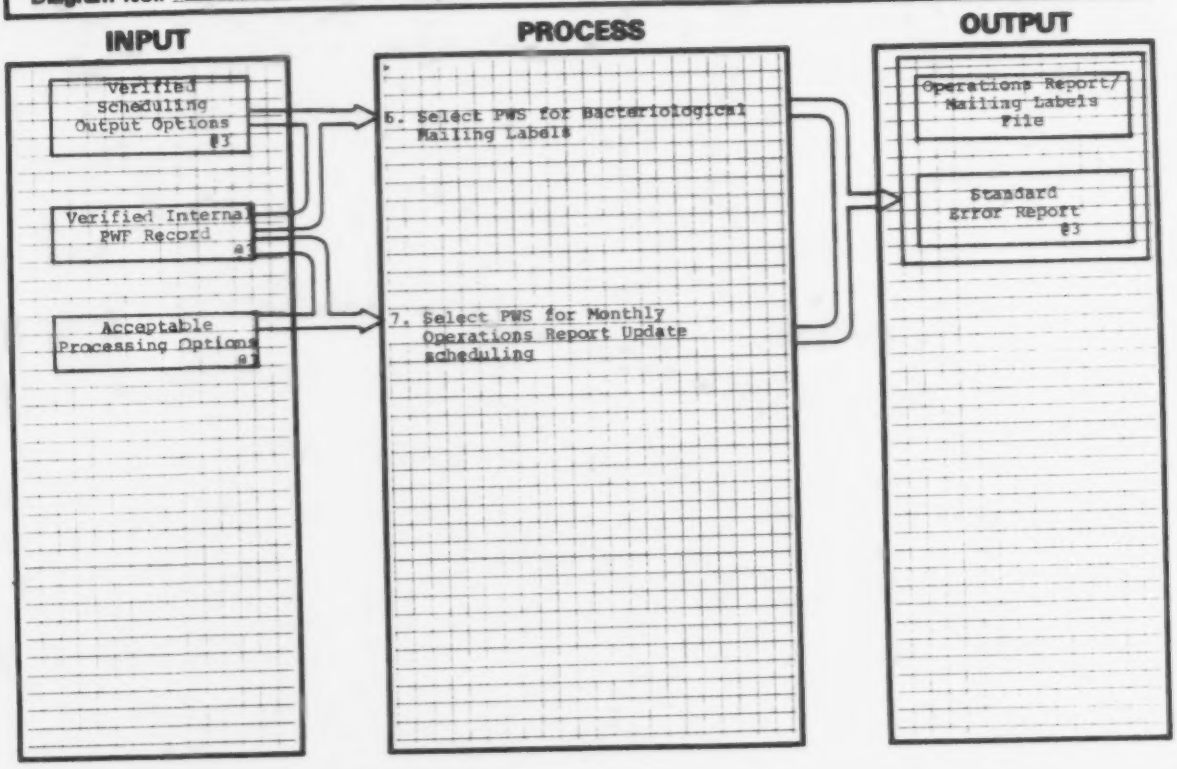


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select the Public Water System (PWS) for Turbidity Scheduling, if requested by the Verified Scheduling Output Options, and if editing against information on the Regulation File (RGF), the Compliance Status File (CSF), the verified Internal Public Water File (PWF) Record, and the Acceptable Processing Options generates no errors due to conflicts between the file information and the scheduling request. Any errors are produced on the Standard Error Report and cause processing in this step to terminate. If selected, the scheduling records (Contaminant Schedule File) are built and CSF records are updated for this PWS.	2.9.1.4.3.1	WAQC130	
2	Select the PWS for chemical scheduling, if requested, and process the scheduling in the same manner as Step 1 above except that the Internal Code Value Table (CVT) is used to provide the Contaminant Name for the scheduling records.	2.9.1.4.3.2	WAQC130	
3	Select the PWS for Bacteriological scheduling, if requested, and process the scheduling in the same manner as Step 1 above.	2.9.1.4.3.3	WAQC130	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 2 **of** 2

Diagram No.: 2.9.1.4.3 **Description:** Build Scheduling Records for each PWS

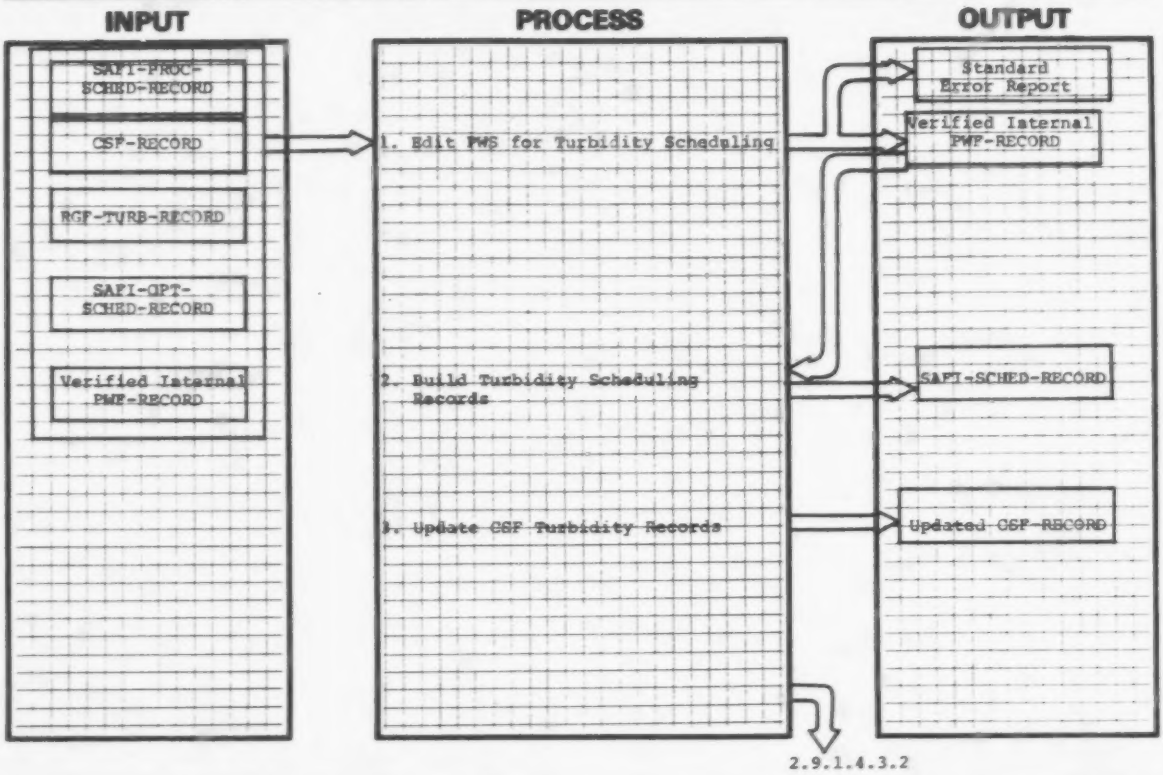

INPUT
PROCESS
OUTPUT
Verified Scheduling Output Options @3
Verified Internal PWF Record @1
Acceptable Processing Options @1
6. Select PWS for Bacteriological Mailing Labels
7. Select PWS for Monthly Operations Report Update scheduling
Operations Report/ Mailing Labels File
Standard Error Report @3

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
4	Select the Public Water System (PWS) for Natural Radionuclide scheduling, if requested, and process the scheduling in the same manner as Step 1.	2.9.1.4.3.4	WAQC130	
5	Select the PWS for Man-Made Radionuclide scheduling, if requested, and process the scheduling in the same manner as Step 2.	2.9.1.4.3.5	WAQC130	
6	Select the PWS for Bacteriological Mailing Labels, if requested by the the Verified Scheduling Output Options, and if editing against information on the Verified Internal Public Water File (PWF) record generates no errors due to conflicts between the file information and the labels request. Any errors are processed in the same manner as Step 1. If selected, the scheduling records (Operation Report/Mailing Labels File) are built for this PWS.	2.9.1.4.3.6	WAQC130	
7	Select the PWS for Monthly Operations Report Update scheduling, if requested by the Acceptable Processing Options, and process the scheduling in the same manner as Step 6 above.	2.9.1.4.3.7	WAQC130	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 7-30-77 **Page:** 1 **of** 2

Diagram No.: 2.9.1.4.3.1 **Description:** Select PWS for Turbidity Scheduling



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Public Water System (PWS) for Turbidity scheduling by checking the following: a) The Turbidity scheduling request field (SAFI-O-S-TURBIDITY) in the Verified Scheduling Output Options record, SAFI-OPT-SCHED-RECORD. b) The scheduling period dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) in the Compliance Status File (CSF) record, CSF-RECORD. c) The sampling requirements and restrictions in the Regulations File (RGF) record, RGF-TURB-RECORD. d) The PWS requirements and restrictions in the Verified Internal Public Water File (PWF) record, PWF-RECORD. e) Information in the Acceptable Processing Options record, SAFI-PROC-SCHED-RECORD, including: 1) Processing Date (SAFI-PROC-DATE) 2) Scheduling Rerun Option (SAFI-PROC-RERUN) If the edit resulted in no errors and in the PWS being selected for Turbidity scheduling, processing continues with Step 2 and 3; otherwise, Turbidity scheduling is terminated and any errors found are produced on the Standard Error Report. NOTE: For details, see Appendix III.A.1		WAQC130	220 224 245 257 REGS. 251 PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-30-77 Page: 2 of 2

Diagram No.: 2.9.1.4.3.1 Description: Select PWS for Turbidity Scheduling

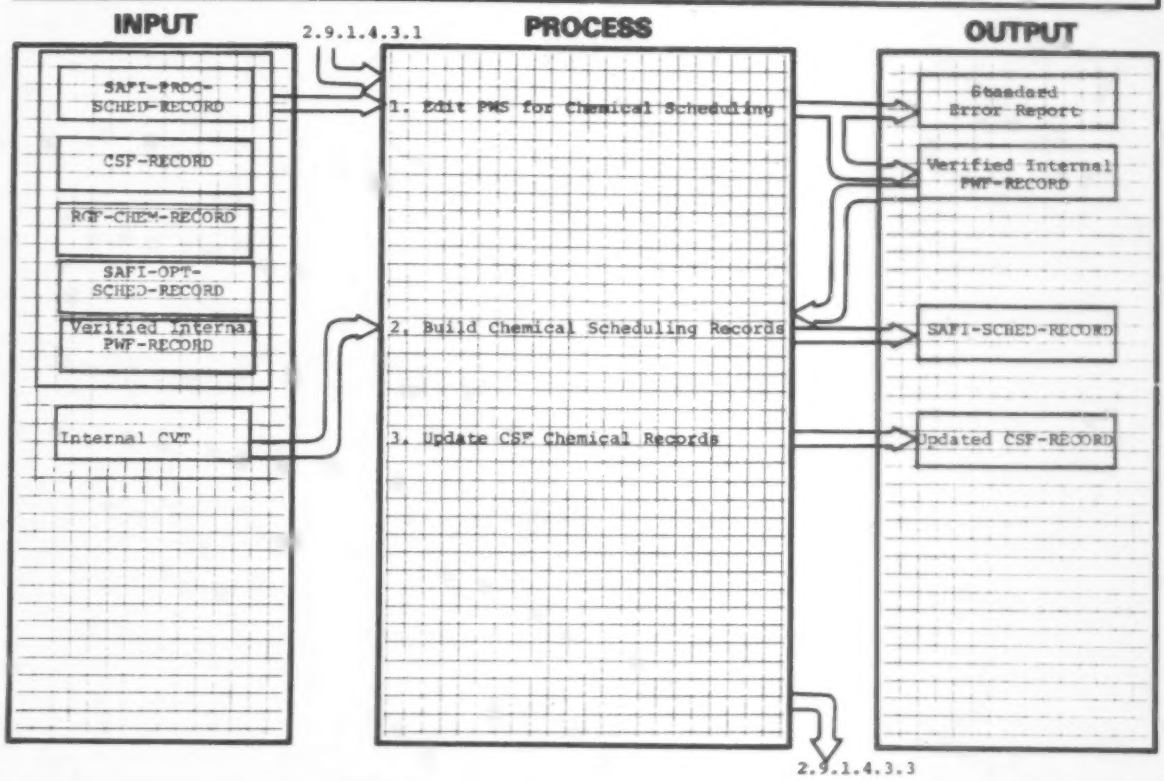
INPUT	PROCESS	OUTPUT

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	Build the Turbidity scheduling records (SAFI-SCHED-RECORD) from the Verified Internal Public Water File (PWF) record, PWF-RECORD, and from the results of the edit in Step 1. For details, see Appendix III.A.2		WAQC130	PWSI. 200
3	Update the (Compliance Status File (CSF) records, CSF-RECORD, Scheduling dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) for Turbidity contaminants for this Public Water System (PWS). For details, see Appendix III.A.2		WAQC130	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 of 2

Diagram No.: 2.9.1.4.3.2 **Description:** Select PWS for Chemical Scheduling



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Public Water System (PWS) for Chemical scheduling by checking the following: a) The Chemical scheduling request field (SAFI-O-S-CHEMICAL) in the Verified Scheduling Output Options record, SAFI-OPT-SCHED-RECORD. b) The scheduling period dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) in the Compliance Status File (CSF) record, CSF-RECORD. c) The sampling requirements and restrictions in the Regulations File (RGF) record, RGF-CHEM-RECORD. d) The PWS requirements and restrictions in the Verified Internal Public Water File (PWF) record, PWF-RECORD. e) Information in the Acceptable Processing Options record, SAFI-PROC-SCHED-RECORD, including: 1) Processing Date (SAFI-PROC-DATE) 2) Scheduling Rerun Option (SAFI-PROC-RERUN) f) The Rescheduling Option (SAFI-O-S-RESCHED-CHEM) from the SAFI-OPT-SCHED-RECORD. If the edit resulted in no errors and in the PWS being selected for Chemical scheduling, processing continues with Step 2 and 3; otherwise, Chemical scheduling is terminated and any errors found are produced on the Standard Error Report. NOTE: For details of the EDIT logic, see Appendix III.B.1		WAQC130	220 244 245 257 REGS. 250 PWSI. 200 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 2 **of** 2

Diagram No.: 2.9.1.4.3.2 **Description:** Select PWS for Chemical Scheduling

INPUT

PROCESS

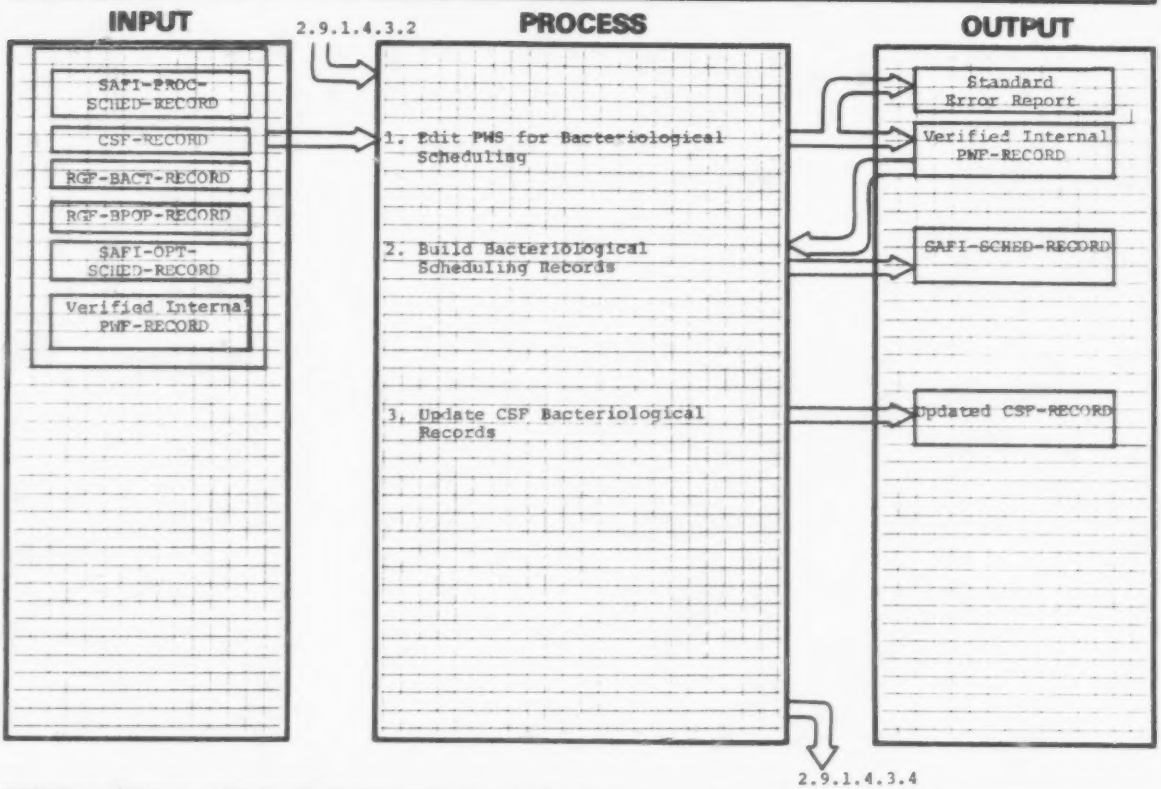
OUTPUT

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	Build the Chemical scheduling records (SAPI-SCHED-RECORD) from the Verified Internal Public Water File (PWF) record, PWF-RECORD, from the results of the edit in Step 1 above, and from the Internal Code Value Table (CVT). For details, see Appendix III.B.3.a.(I)		WAQC130	PWSI. 200 MSIS. 206
3	Update the Compliance Status File (CSF) records, CSF-RECORD, scheduling dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) for Chemical contaminants for this Public Water System (PWS). For details, see Appendix III.B.3.a.(II)		WAQC130	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 of 2

Diagram No.: 2.9.1.4.3.3 **Description:** Select PWS for Bacteriological Scheduling



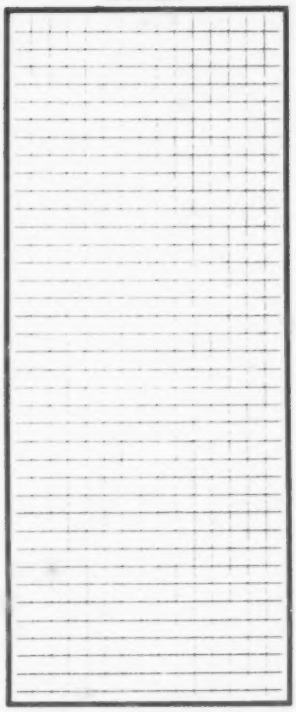
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Public Water System (PWS) for Bacteriological Scheduling by checking the following: a) The Bacteriological scheduling request field (SAFI-O-S-BACT) in the Verified Scheduling Output Options record, SAFI-OPT-SCHED-RECORD. b) The scheduling period dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) in the Compliance Status File (CSF) record, CSF-RECORD. c) The sampling requirements and restrictions in the Regulations File (RGF) records, RGF-BACT-RECORD-and RGF-BPOP-RECORD. d) The PWS requirements and restrictions in the Verified Internal Public Water File (PWF) record, PWF-RECORD. e) Information in the Acceptable Processing Options record, SAFI-PROC-SCHED-RECORD, including: 1) Processing Date (SAFI-PROC-DATE) 2) Scheduling Rerun Option (SAFI-PROC-RERUN) If the edit resulted in no errors and in the PWS being selected for Bacteriological Scheduling, processing continues with Steps 2 and 3. Otherwise, Bacteriological scheduling is terminated and any errors found are produced on the Standard Error Report. NOTE: For details, see Appendix III.C.1		WAQC130	220 244 245 257 REGS. 252 REGS. 253 PWSI. 200 MSIS. 309

MODEL STATE INFORMATION SYSTEM

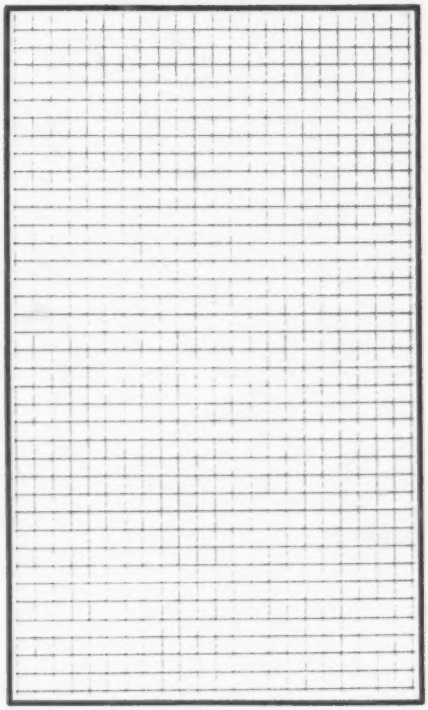
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 2 **of** 2

Diagram No.: 2.9.1.4.3.3 **Description:** Select PWS for Bacteriological Scheduling

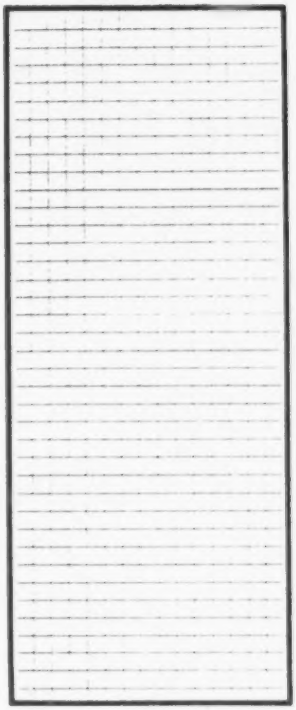
INPUT



PROCESS



OUTPUT

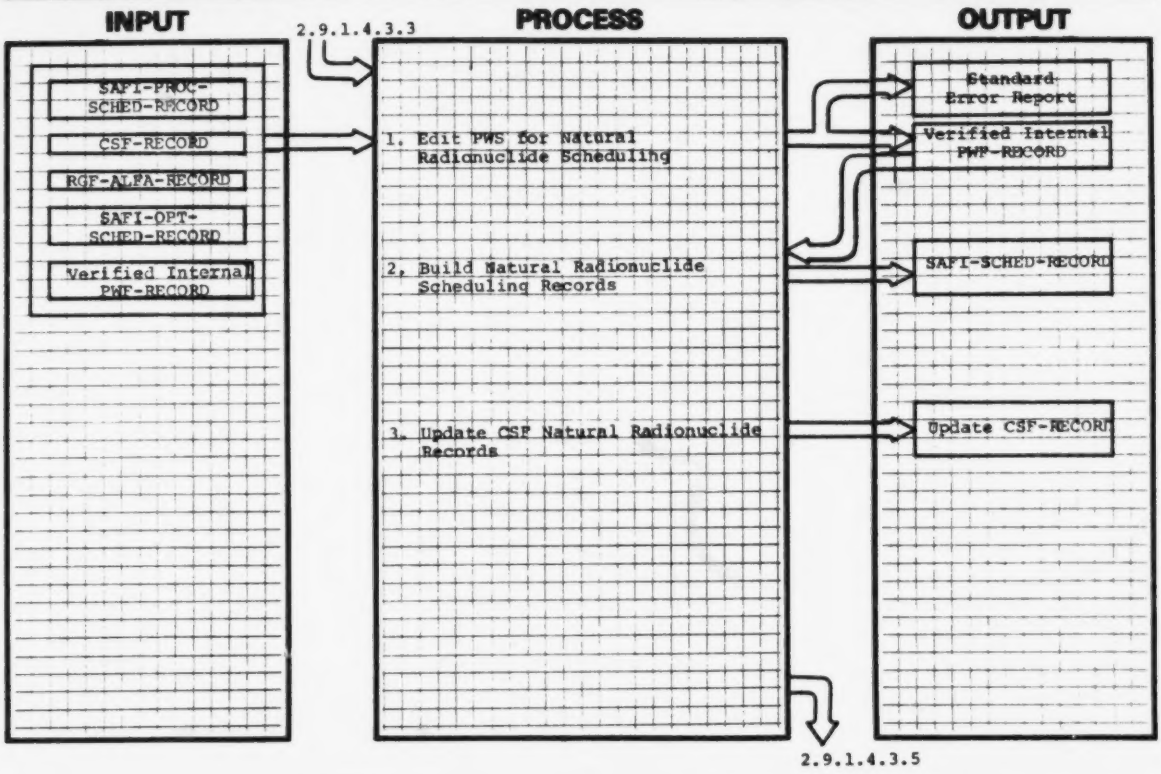


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	Build the Bacteriological scheduling records (SAFI-SCHED-RECORD) from the Verified Internal Public Water File (PWF) record, PWF-RECORD, and from the results of the edit in Step 1. For details, see Appendix III.C.1		WAQC130	PWSI. 200
3	Update the Compliance Status File (CSF) records, CSF-RECORD, scheduling dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) for Bacteriological contaminants for this Public Water System (PWS). For details, see Appendix III.C.2		WAQC130	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 **of** 2

Diagram No.: 2.9.1.4.3.4 **Description:** Select PWS for Natural Radionuclide Scheduling



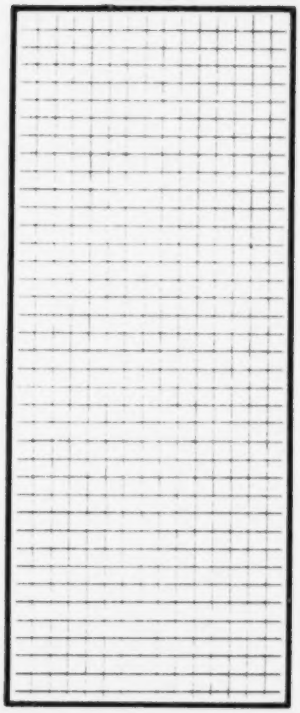
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Public Water System (PWS) for Natural Radionuclide (Rads) scheduling by checking the following: a) The Natural Radionuclide scheduling request field (SAFI-O-S-RADS-NATURAL) in the verified Scheduling Output Options record, SAFI-OPT-SCHED-RECORD. b) The scheduling period dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) in the Compliance Status File (CSF) record, CSF-RECORD. c) The sampling requirements and restrictions in the Regulations File (RGF) record, RGF-ALFA-RECORD. d) The PWS requirements and restrictions in the Verified Internal Public Water File (PWF) record, PWF-RECORD. e) Information in the Acceptable Processing Options record, SAFI-PROC-SCHED-RECORD, including: 1) Processing Date (SAFI-PROC-DATE) 2) Scheduling Rerun Option (SAFI-PROC-RERUN) f) The Rescheduling Option (SAFI-O-S-RESCHED-RADS) from the SAFI-OPT-SCHED-RECORD. If the edit resulted in no errors and in the PWS being selected for Natural Rads scheduling, processing continues with Steps 2 and 3; otherwise, Natural Rads scheduling is terminated and any errors found are produced on the Standard Error Report. NOTE: For details, see Appendix III.D.1		WAQC130	220 244 245 257 REGS. 256 PWSI. 200 MSIS. 309

MODEL STATE INFORMATION SYSTEM

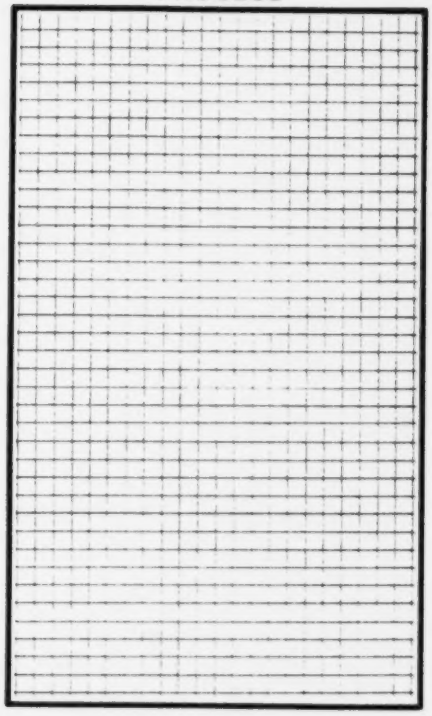
Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 2 of 2

Diagram No.: 2.9.1.4.3.4 **Description:** Select PWS for Natural Radionuclide Scheduling

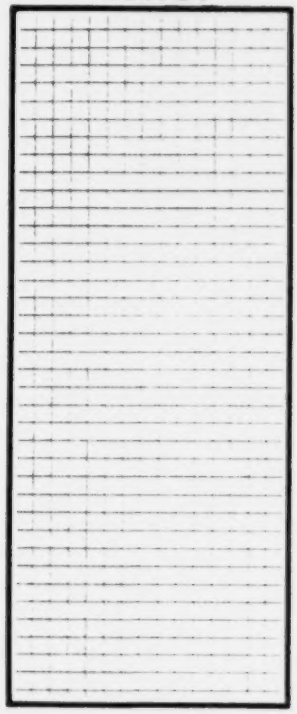
INPUT



PROCESS



OUTPUT

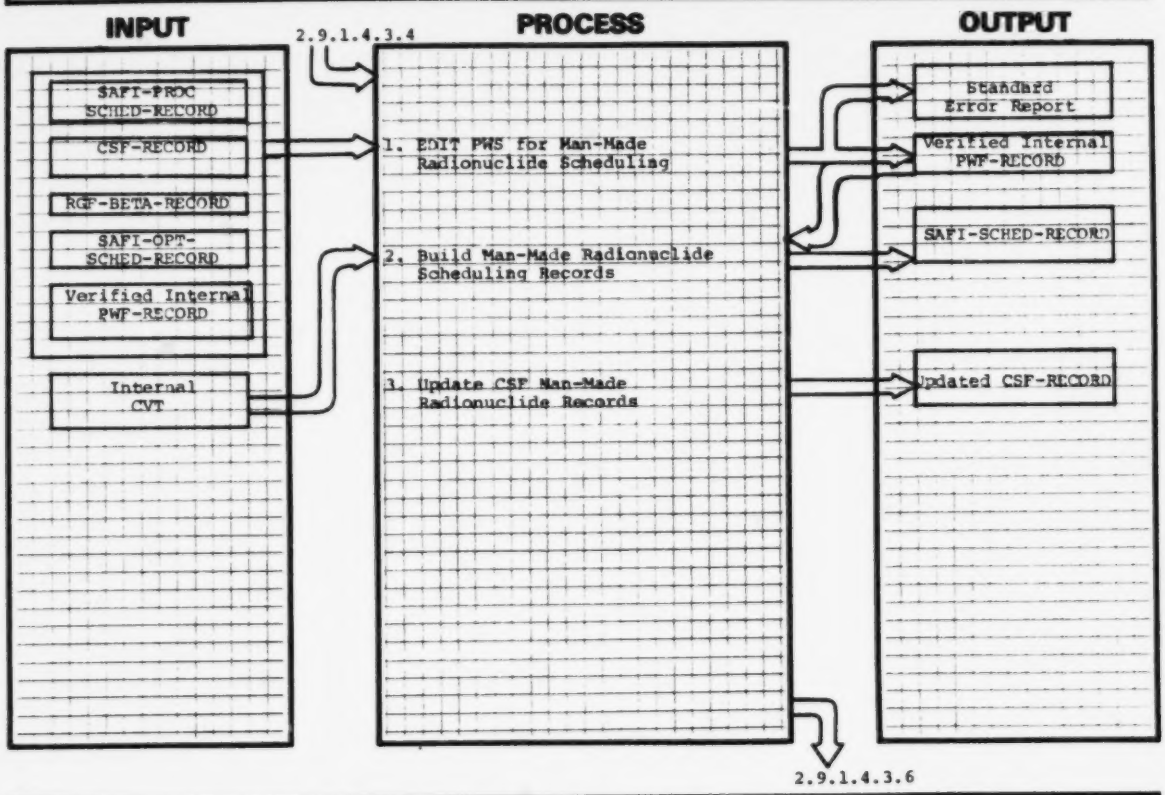


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	Build the Natural Radionuclide scheduling records (SAFI-SCHED-RECORD) from the Verified Internal Public Water File (PWF) record, PWF-RECORD, and from the results of the edit in Step 1. For details, see Appendix III.D.2		WAQC130	PWSI. 200
3	Update the Compliance Status File (CSF) records, CSF-RECORD, scheduling dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) for Natural Rads contaminants for this Public Water System (PWS). For details, see Appendix III.D.3		WAQC130	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 **of** 2

Diagram No.: 2.9.1.4.3.5 **Description:** Select PWS for Man-Made Radionuclide Scheduling



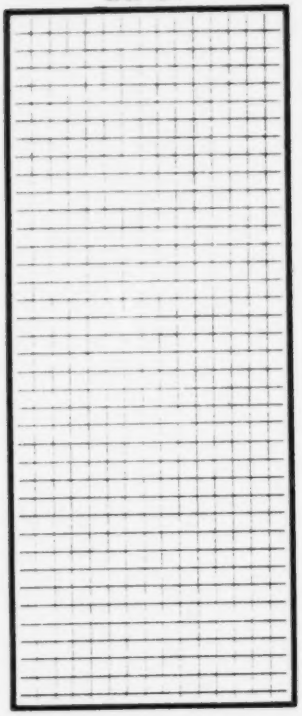
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Public Water System (PWS) for Man-Made Radionuclide (Rads) scheduling by checking the following: a) The Man-Made Radionuclide scheduling request field (SAFI-O-S-RADS-MAN-MADE) in the Verified Scheduling Output Options record, SAFI-OPT-SCHED-RECORD. b) The scheduling period dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) in the Compliance Status File (CSF) record, CSF-RECORD. c) The sampling requirements and restrictions in the Regulations File (RGF) records, RGF-BETA-RECORD and RGF-EMIT-RECORD. d) The PWS requirements and restrictions in the Verified Internal Public Water File (PWF) record, PWF-RECORD. e) Information in the Acceptable Processing Options record, SAFI-PROC-SCHED-RECORD, including: 1) Processing Date (SAFI-PROC-DATE) 2) Scheduling Rerun Option (SAFI-PROC-RERUN) f) The Rescheduling Option (SAFI-O-S-RESCHED-RADS) from the SAFI-OPT-SCHED-RECORD. If the edit resulted in no errors and in the PWS being selected for Man-Made Rads scheduling, processing continues with Steps 2 and 3; otherwise, Man-Made Rads scheduling is terminated and any errors found are produced on the Standard Error Report. NOTE: For details, see Appendix III.E.1		WAQC130	220 244 245 257 REGS. 255 PWSI. 200 MSIS. 306

MODEL STATE INFORMATION SYSTEM

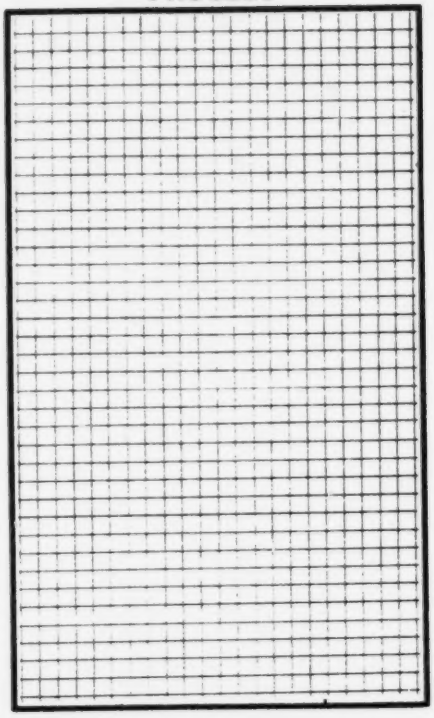
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-30-77 Page: 2 of 2

Diagram No.: 2.9.1.4.3.5 Description: Select PWS for Man-Made Radionuclide Scheduling

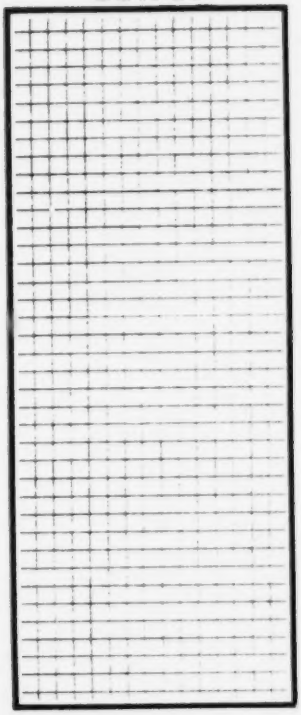
INPUT



PROCESS



OUTPUT

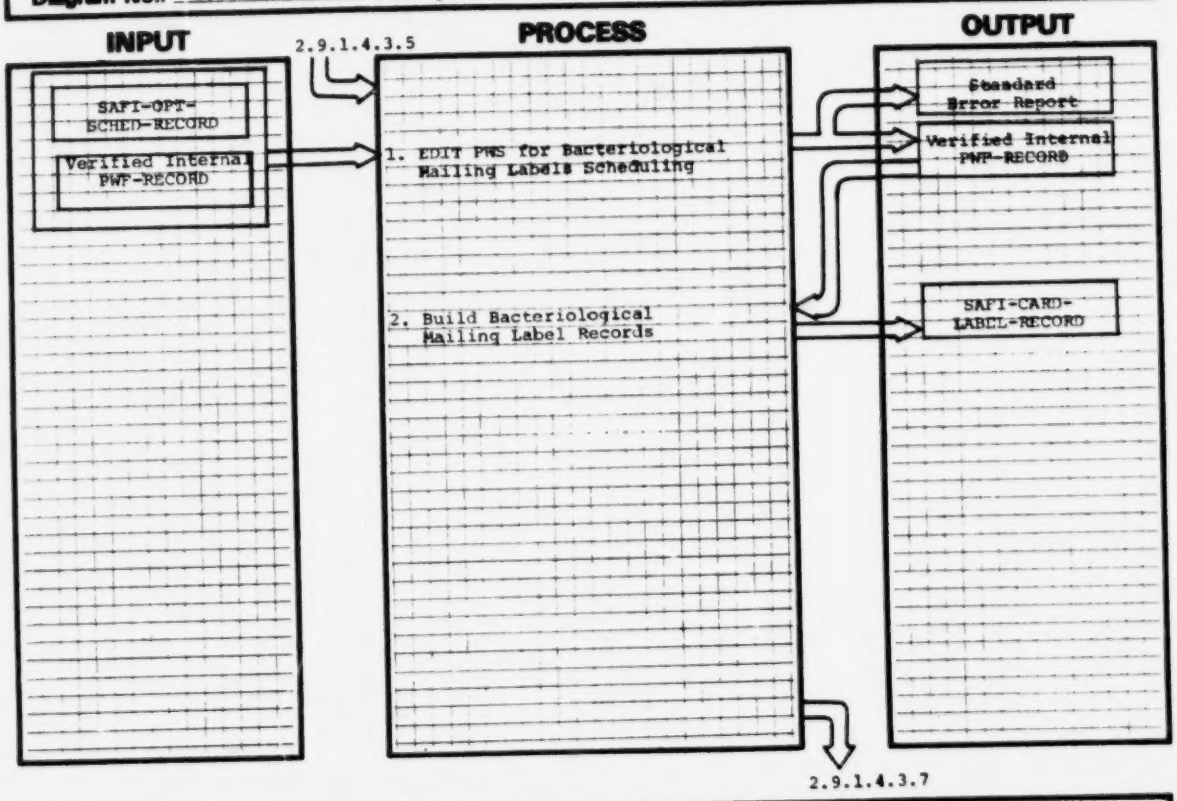


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	Build the Man-Made Radionuclide scheduling records (SAFI-SCHED-RECORD) from the Verified Internal Public Water File (PWF) record, PWF-RECORD, from the results of the EDIT in Step 1 above, and from the Internal Code Value Table (CVT). For details, see Appendix III.E.3.a.(I)		WAQC130	PWSI. 200
3	Update the Compliance Status File (CSF) records, CSF-RECORD, Scheduling dates (CSF-SCHED-START-DATE and CSF-SCHED-END-DATE) for Man-Made Rads contaminants for this Public Water System (PWS). For details, see Appendix III.E.3.a.(II)		WAQC130	257

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 of 1

Diagram No.: 2.9.1.4.3.6 **Description:** Select PWS for Bacteriological Mailing Labels Scheduling

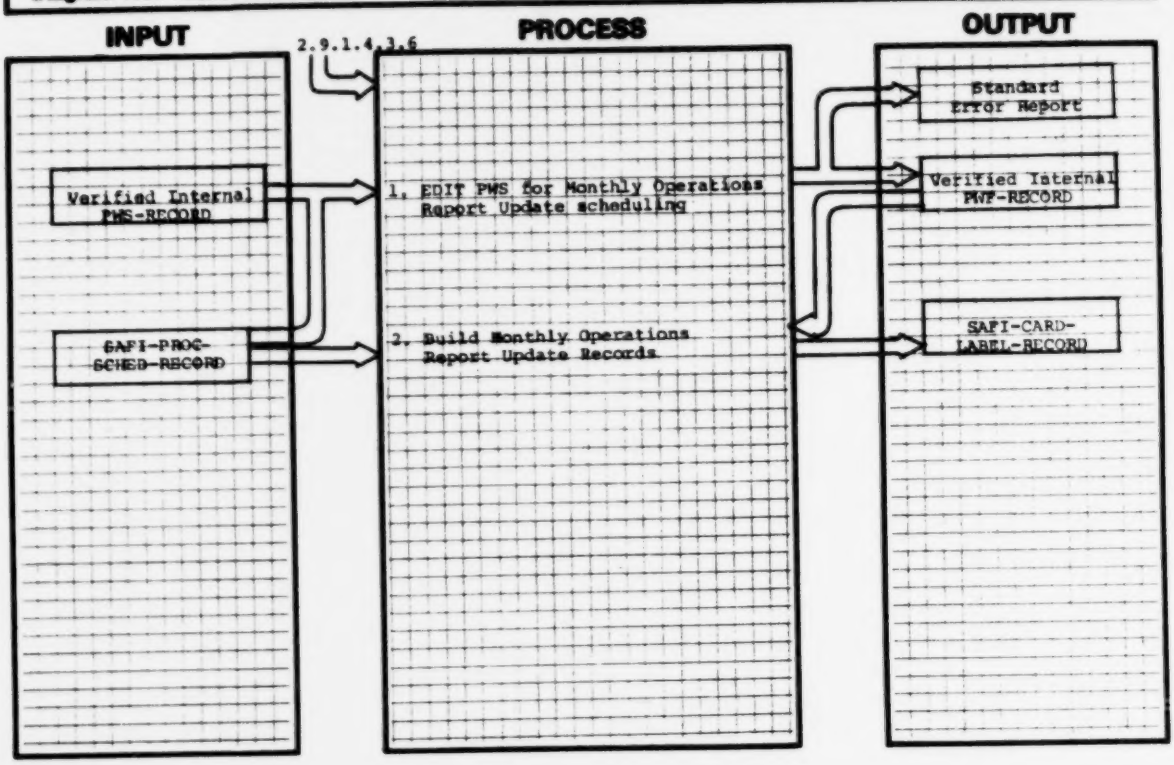


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Public Water System (PWS) for Bacteriological Mailing Labels scheduling by checking the following: a) The Bacteriological Mailing Labels request fields (SAFI-O-S-LABELS-OPTION and SAFI-O-S-LABELS-NUMBER) in the Verified Scheduling Output Options record, SAFI-OPT-SCHED-RECORD. b) The PWS requirements and restrictions in the Verified Internal Public Water File (PWF) record, PWF-RECORD. If the edit results in no errors and in the PWS being selected for Bacteriological Mailing Labels scheduling, processing continues with Step 2. Otherwise, Bacteriological Mailing Labels scheduling is terminated and any errors found are produced on the Standard Error Report. For details, see Appendix III.F.1		WAQC130	245 PWSI. 200 MSIS. 309
2	Build the Bacteriological Mailing Label Records (SAFI-CARD-LABEL-RECORD) from the Verified Internal PWF record, PWF-RECORD, and from the results of the edit in Step 1 above. For details, see Appendix III.F.2		WAQC130	242

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 of 1

Diagram No.: 2.9.1.4.3.7 **Description:** Select PWS for Monthly Operations Report Update Schedulin

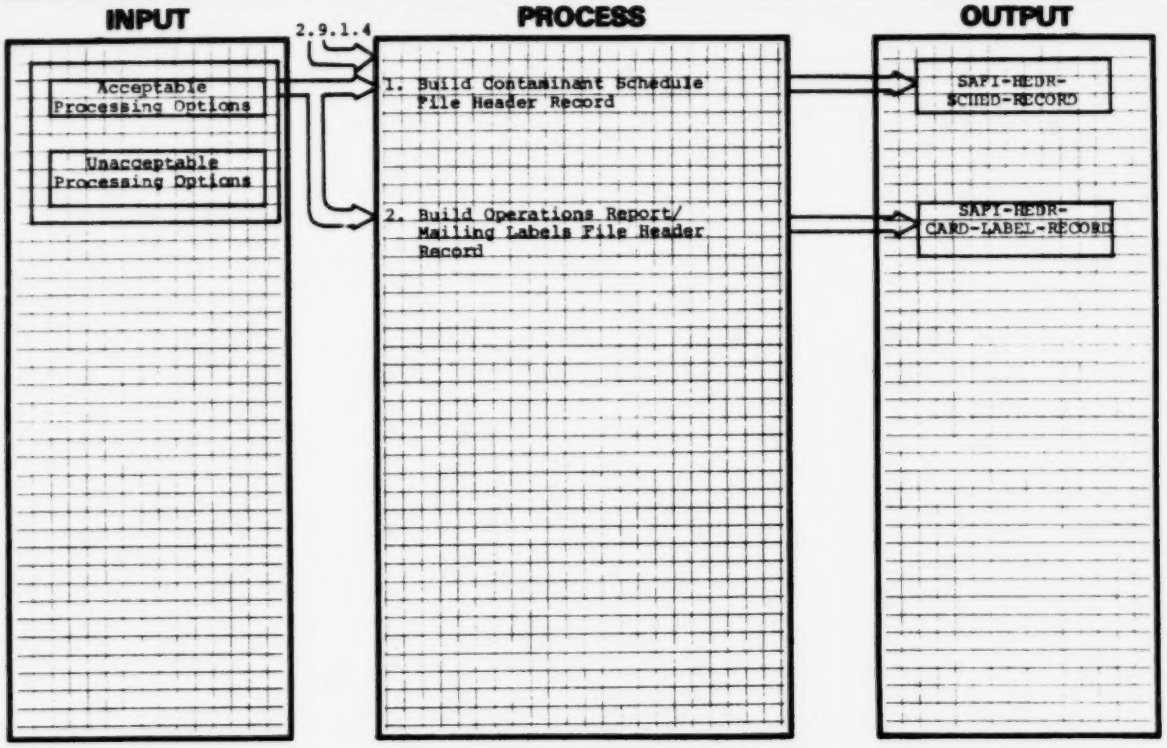


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Public Water System (PWS) for Monthly Operations Report Update scheduling by checking the following: a) The Monthly Operations Report scheduling request field (SAFI-PROC-OPER-REPT) in the Acceptable Processing Options record, SAFI-PROC-SCHED-RECORD. b) The PWS requirements and restrictions in the Verified Internal Public Water File (PWF) record, PWF-RECORD. If the edit results in no errors and in the PWS being selected for Monthly Operations Report Update Form scheduling, processing continues with Step 2. Otherwise, Monthly Operations Report Update Form scheduling is terminated and any errors found are produced on the Standard Error Report. For details, see Appendix III.G.1		WAQC130	244 PWSI. 200 MSIS. 309
2	Build the Monthly Operations Report Update records (SAFI-CARD-LABEL-RECORD) from the Verified Internal PWF record, PWF-RECORD, from the results of the EDIT in Step 1 above, and from the Processing Date (SAFI-PROC-DATE) in the SAFI-PROC-SCHED-RECORD. For details, see Appendix III.G.2		WAQC130	242 244

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-30-77 **Page:** 1 **of** 1

Diagram No.: 2.9.1.5 **Description:** Build Scheduling Header Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Contaminant Schedule File header record based on the results of the scheduling process (HIPO 2.9.1.4) and the Processing Options. The record is built with 'LOW VALUES' in the first portion so that it will be sorted to the front of the file. For details, see Appendix V.A.		WAQC130	219
2	Build the Operations Report/Mailing Labels File Header record based on the results of the scheduling process HIPO (2.9.1.4) and the Processing Options. The record is built with 'LOW VALUES' in the first portion so that it will be sorted to the front of the file. For details, see Appendix V.B.		WAQC130	243

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC170
DATE: March 24, 1977

I. OBJECTIVES:

The objective of this program is to produce the Bacteriological or Turbidity Analysis Input Form to be used by the Public Water Systems (PWS's) to report a list of results of Bacteriological or Turbidity sample analyses to the state. These forms are turnaround documents used as input to the Water Quality Compliance Subsystem.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Contaminant Schedule File	SAFI-HEDR-SCHED-RECORD	WAQC.219
		SAFI-SCHED-RECORD	WAQC.220

B. Processing Options Record:

	NAME	FORM	EXHIBIT LAYOUT
1.	Restart File	WAQC.125	WAQC.246

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Error Report	MSIS.309

C. Turnaround Documents:

	NAME	EXHIBIT LAYOUT
1.	Bacteriological or Turbidity Analysis Input Form	WAQC.401

IV. FUNCTIONS:

1. Verify the Contaminant Schedule File header record. If the report flag is not equal to "Y", then terminate processing. The Contaminant Schedule File is externally sorted by Contaminant ID within Sample End Date within Public Water System (PWS)-ID within Zip Code.

2. Edit the "RESTART" Processing Options Record, if any.

3. Produce the Bacteriological or Turbidity Analysis Input Form by selecting appropriate records from the Contaminant Schedule File.

4. Produce the Standard Error Report if any Processing Options in error were detected.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Restart Form for Job (WAQC150-180).

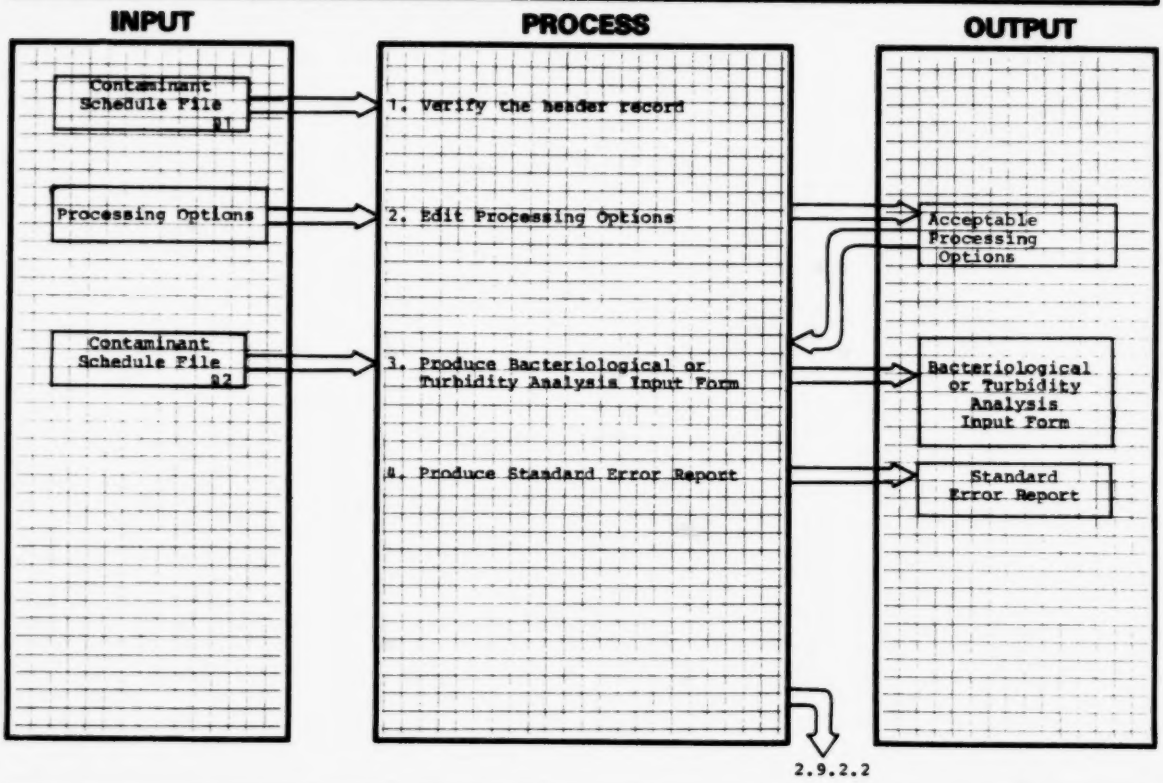
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1

Diagram No.: 2.9.2.1 **Description:** Produce Bacterio. Or Turbidity Analysis Input Form

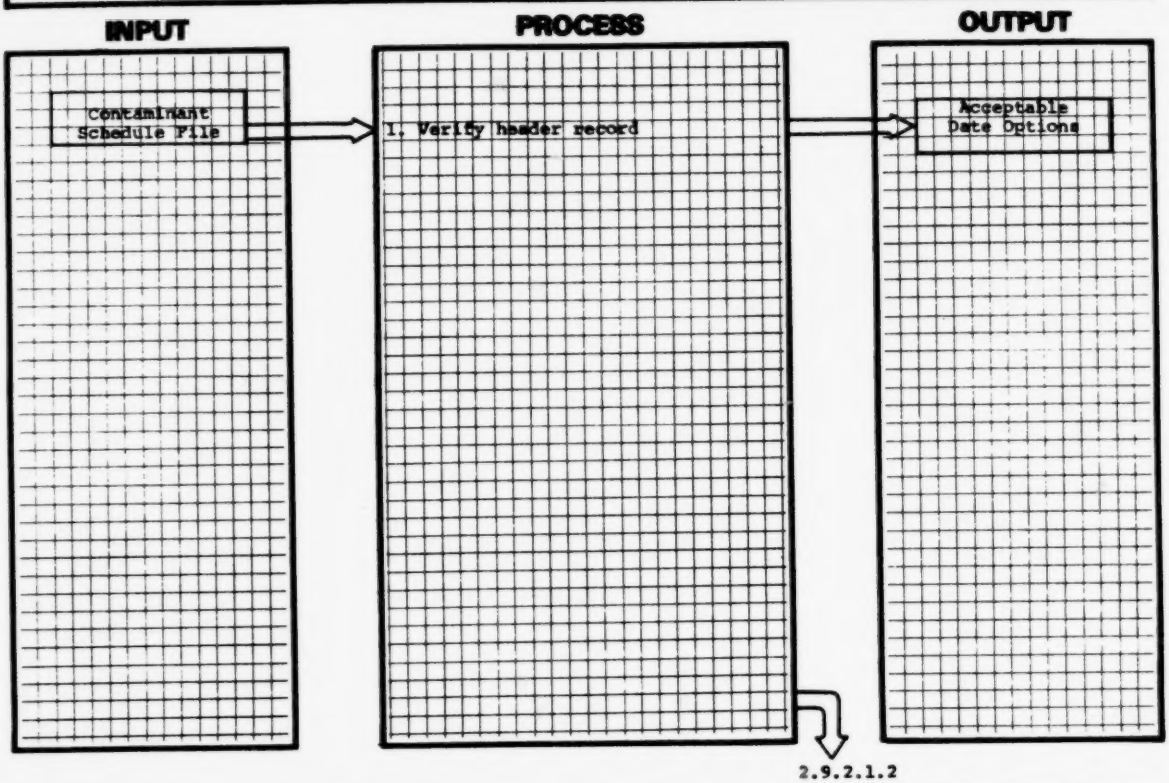


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record report flag. If the report flag is not equal to 'Y', then terminate processing.	2.9.2.1.1	WAQC170	
2	Edit the 'RESTART' Processing Options.	2.9.2.1.2	WAQC170	
3	Produce the Bacteriological or Turbidity Analysis Input Form by selecting appropriate records, based on transaction type '05', from the Contaminant Schedule File. This file is externally sorted by Contaminant ID within Sample End Date within Public Water System (PWS) ID within Zip Code.	2.9.2.1.3	WAQC170	
4	Produce the Standard Error Report if any Processing Options errors were detected in Step 2.	2.9.2.1.4	WAQC170	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 **of** 1

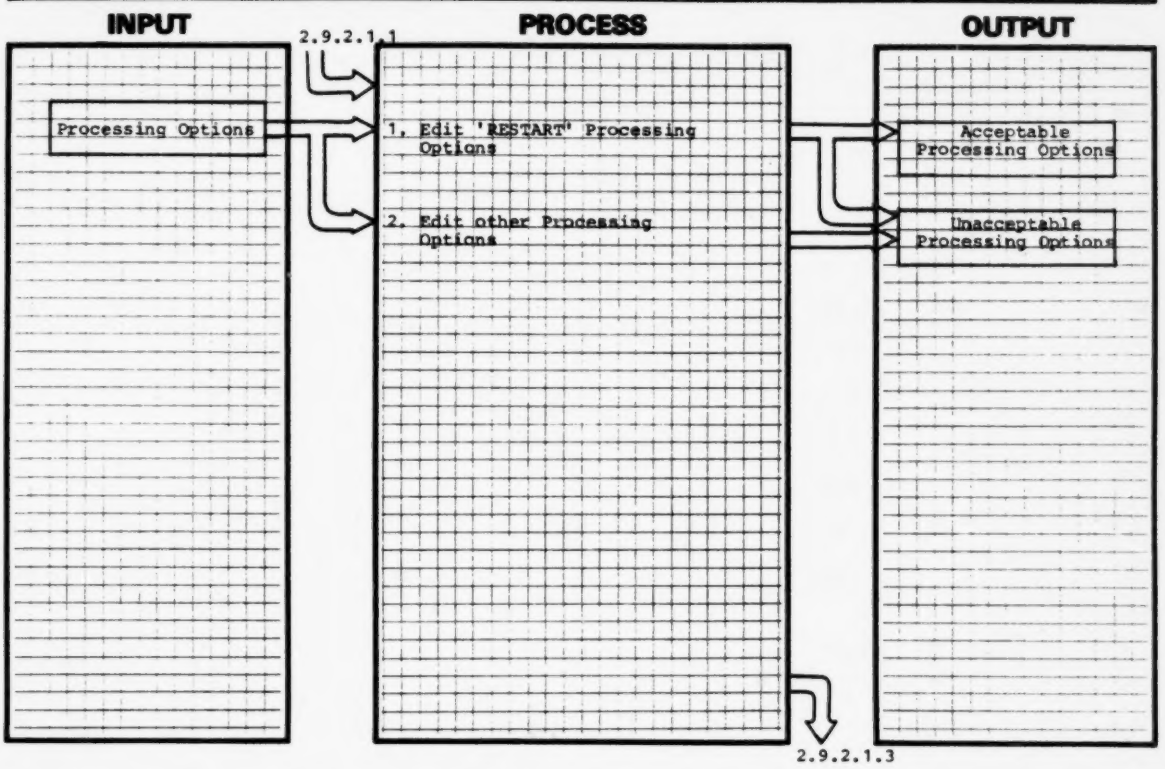
Diagram No.: 2.9.2.1.1 **Description:** Verify header record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record on the Contaminant Schedule File. If the SAFI-H-S-LIST-FORMS is set to 'Y', save SAFI-H-S-SCHED-DATE to print on the forms, and processing continues. If SAFI-H-S-LIST-FORM is set to 'N', processing terminates.		WAQC170	219

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 **of** 1
Diagram No.: 2.9.2.1.2 **Description:** Edit Processing Options

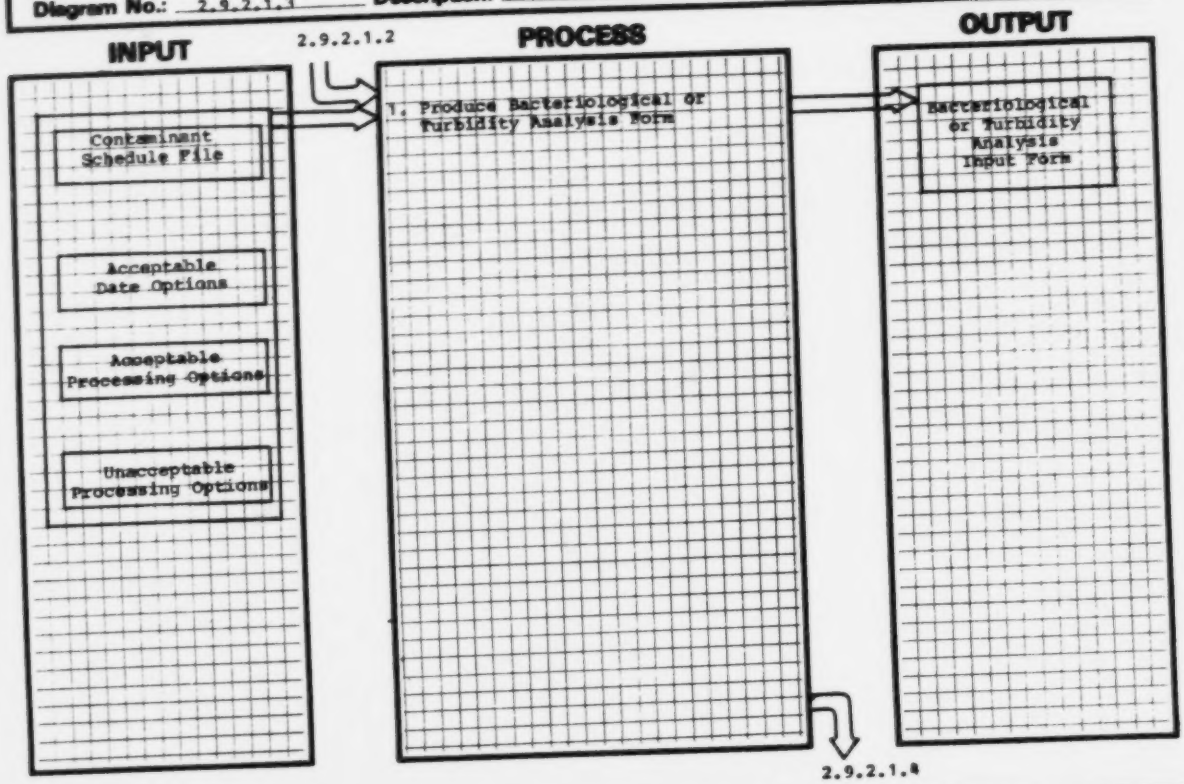


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the 'RESTART' Processing Options. If no 'RESTART' Processing Options record is present, processing continues with the production of the report. If a 'RESTART' Processing Options is present, the Restart Number must be numeric, otherwise processing terminates. If more than one 'RESTART' Processing Options record is present processing is terminated.		WAQC170	125 246
2	Edit Processing Options records with other than 'RESTART' in positions 1-7. If any of these are found, they are in error and processing terminates. NOTE: Any Processing Options records in error along with associated error messages will be written on the Standard Error Report (see HIPO 2.9.2.3.4).		WAQC170	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-24-77 Page: 1 of 2

Diagram No.: 2.9.2.1.3 Description: Produce Bacterio or Turbidity Analysis Input Form



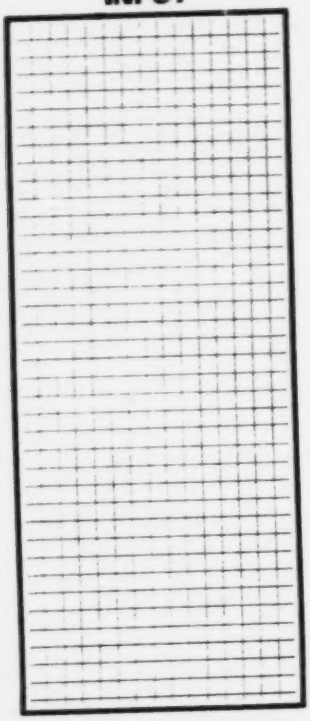
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Bacteriological or Turbidity Analysis Input Form, using only those records with transaction code '05' as follows: a) Three dummy pages using X's in preprinted fields are produced for use by the operator in aligning the forms; b) The input forms are filled in as follows: 1) Move SAFI-S-PWS-ID to PWS ID; 2) Move SAFI-S-TRANSACTION-CODE to Transaction Code; 3) Move SAFI-S-MAILING-ADDRESS to Public Water System Name and Address; 4) Move SAFI-S-CONTAMINANT-ID to Contaminant ID; 5) Move SAFI-S-CONTAM-NAME to Contaminant Name; 6) Move SAFI-S-SAMPLE-PERIOD-END to 'ALL SAMPLES TO BE TAKEN ON OR BEFORE' Clause; 7) Move 'D' to SAMPLE TYPE; 8) Move the saved PROC date from the header record to the top of the Input Form; 9) If the first byte of the Contaminant ID is equal to '0', move '0' to the first position of ANALYSIS METHOD. If the first byte of the Contaminant ID is equal to '3', move '3' to the first position of Analysis Method. c) Page breaks are performed if any of the following changes occurred: 1) PWS ID 2) Contaminant Group (first one or two digits of the Contaminant ID) 3) SAMPLE END DATE		WAQC170	220 401

MODEL STATE INFORMATION SYSTEM

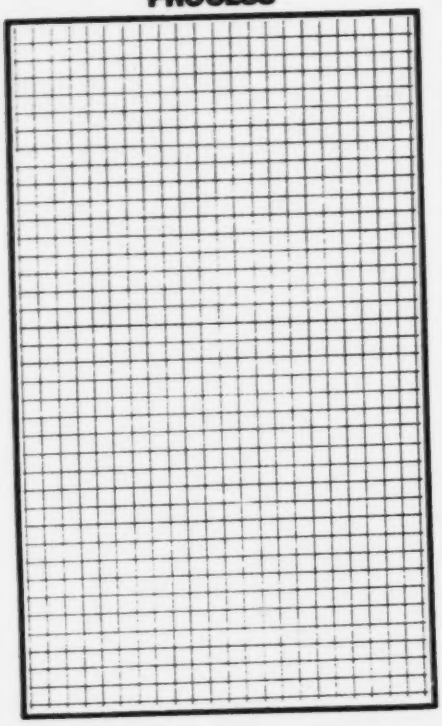
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-24-77 Page: 2 of 2

Diagram No.: 2.9.2.1.3 Description: Produce Bacterio or Turbidity Analysis Input Form

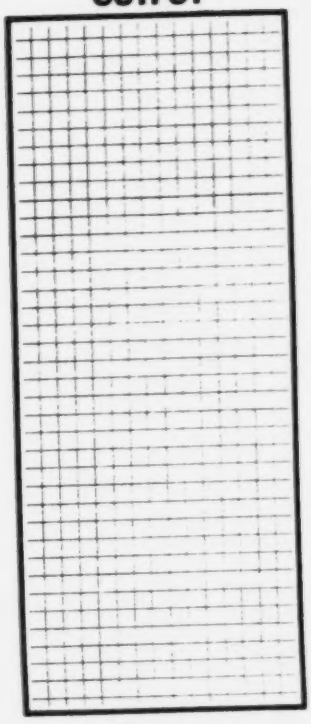
INPUT



PROCESS



OUTPUT

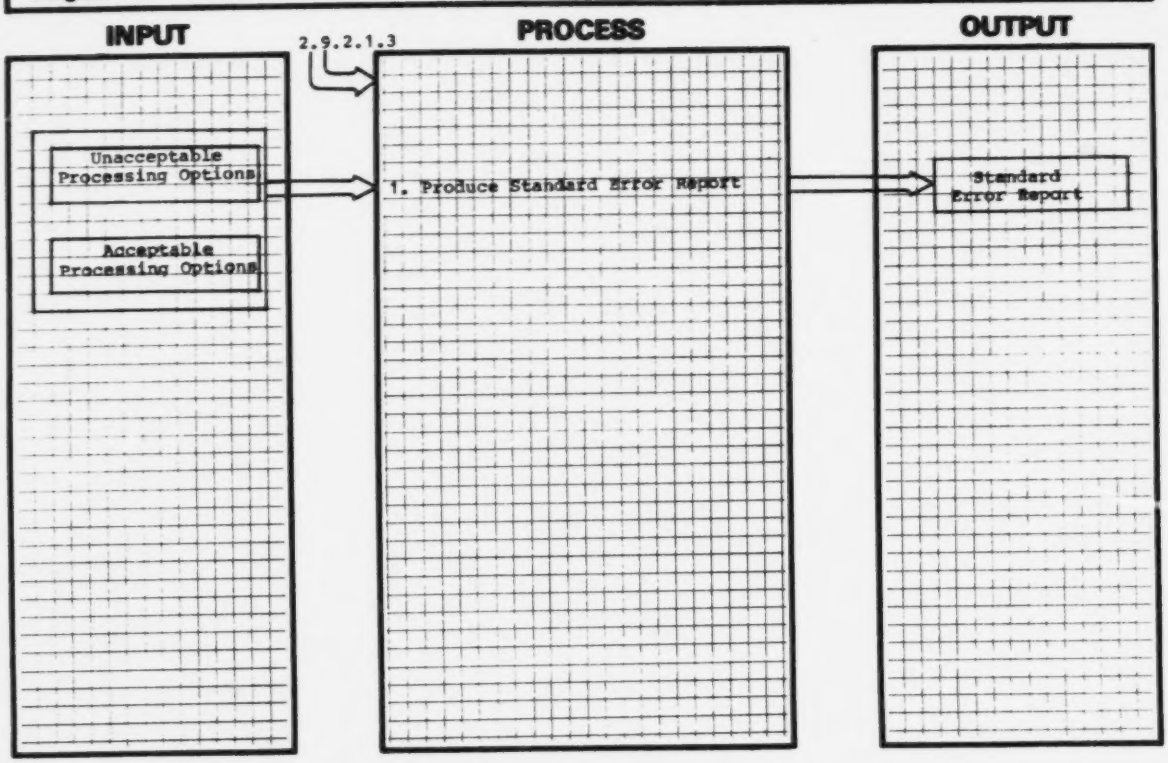


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	NOTE: Ten detail lines are filled in for each page. The field SAFI-S-NUMBER-SAMPLES is divided by 10 to obtain the number of pages to print for the PWS. d) If an acceptable 'RESTART' Processing Options record is present, a switch is set which causes those report pages with a page number less than the page number specified on the 'RESTART' Processing Options record not to be printed. Once the page counter equals the page number on the 'RESTART' Processing Options record, this switch is turned off and normal report production begins. If there are any unacceptable Processing Options records, no reports are produced and processing is terminated. If there are no Processing Options records, normal report production is assumed beginning with the first report page.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-24-77 Page: 1 of 1

Diagram No.: 2.9.2.1.4 Description: Produce Standard Error Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Error Report is produced only if there are any Processing Options records in error. The Processing Options records in error are printed along with associated error messages. The date obtained from the Contaminant Schedule File header record is used as the report date.		WAQC170	MSIS. 309

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC180
DATE: March 24, 1977

I. OBJECTIVES:

The objective of this program is to produce the Bacteriological or Turbidity Summary Analysis Input Form to be used by the Public Water Systems (PWS's) to report summaries of results of Bacteriological or Turbidity sample analyses to the state. These forms are turnaround documents used as input to the Water Quality Compliance Subsystem.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Contaminant Schedule File	SAFI-HEDR-SCHED-RECORD	WAOC.219
		SAFI-SCHED-RECORD	WAOC.220

B. Processing Options Record:

	NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Restart File	WAQC.125	WAQC.246

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Lavouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Error Report	MSIS.309

C. Turnaround Documents:

	NAME	EXHIBIT LAYOUT
1.	Bacteriological or Turbidity Summary Analysis Input Form	WAOC.402

IV. FUNCTIONS:

1. Verify the Contaminant Schedule File header record. If the report flag is not on, then terminate processing. The Contaminant Schedule File is externally sorted by Contaminant ID within Sample End Date within Public Water System (PWS)-ID within Zip Code.

2. Edit the "RESTART" Processing Options Record, if any.

3. Produce the Bacteriological or Turbidity Summary Analysis Input Form by selecting appropriate records from the Contaminant Schedule File.

4. Produce the Standard Error Report if any Processing Options in error were detected.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Restart Form for Job (WA0C150-180).

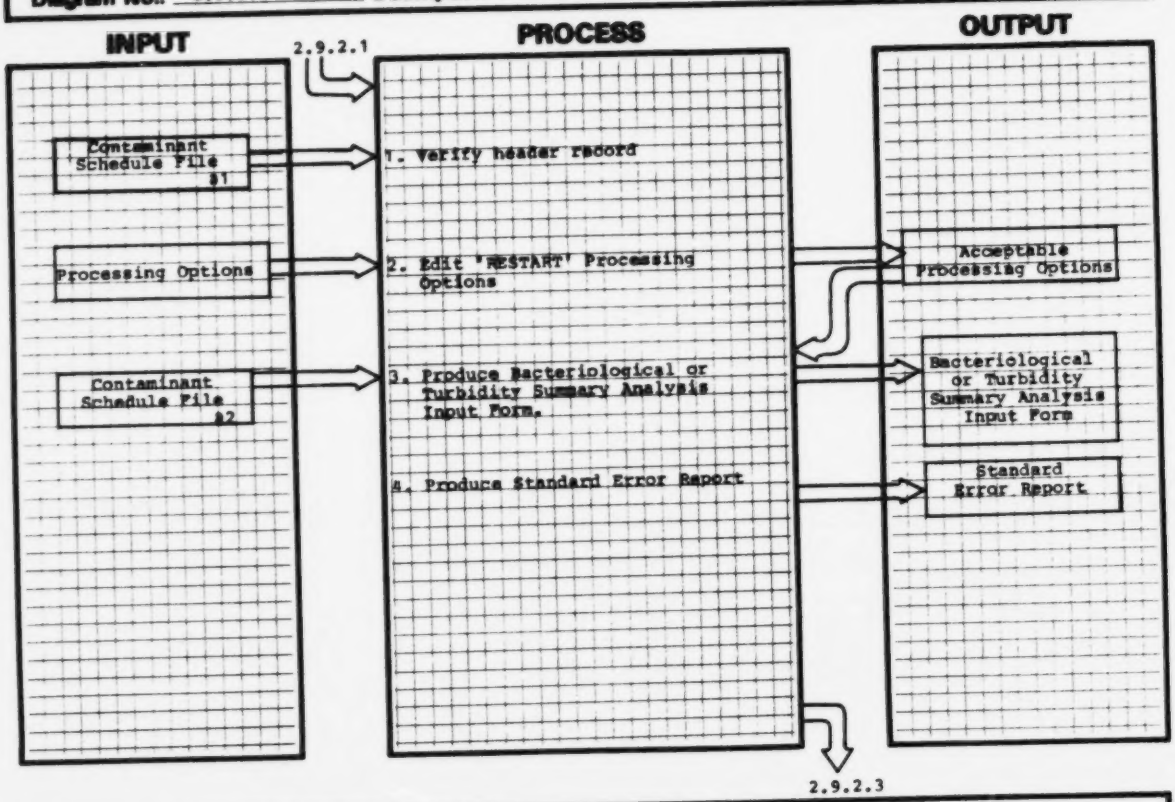
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1

Diagram No.: 2.9.2.2 **Description:** Produce Bacterio. or Turbidity Summary Analysis Form

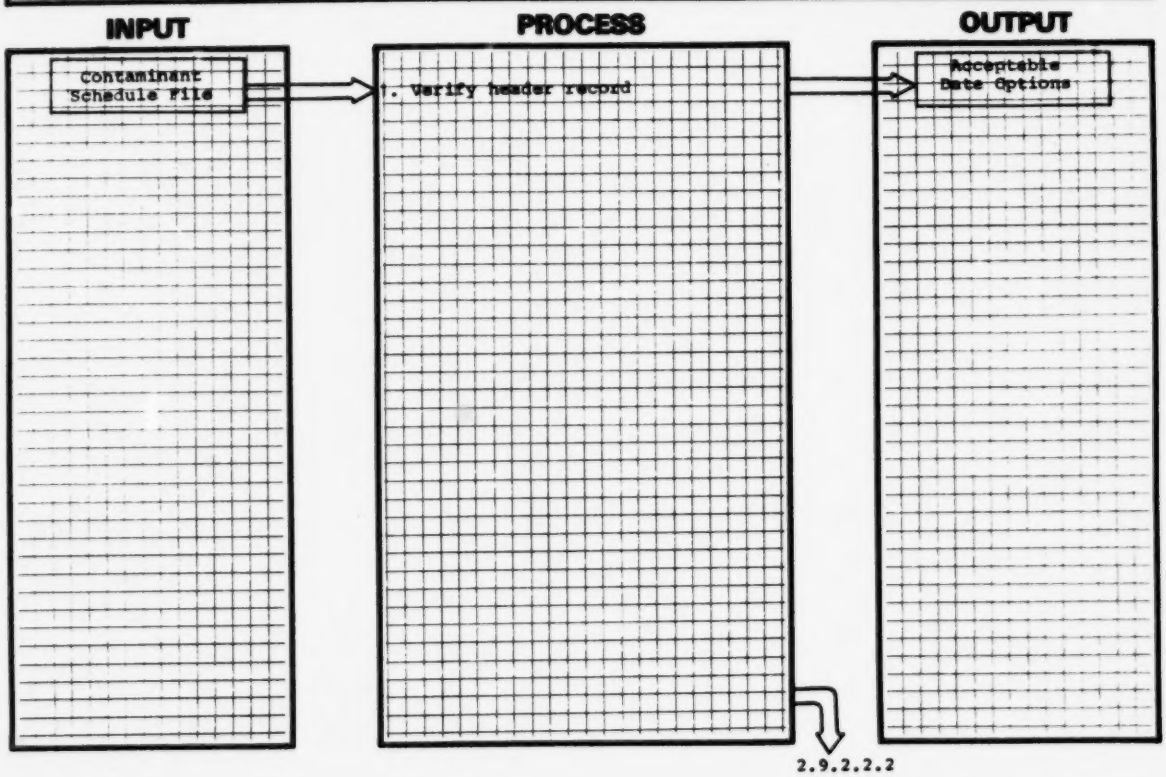


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record report flag. If the report flag is not equal to 'Y', then terminate processing.	2.9.2.2.1	WAQC180	
2	Edit the 'RESTART' Processing Options.	2.9.2.2.2	WAQC180	
3	Produce the Bacteriological or Turbidity Summary Analysis Input Form by selecting appropriate records, based on transaction type '01', from the Contaminant Schedule File. This file is externally sorted by Contaminant ID within Sample End Date within Public Water System (PWS) ID within Zip Code.	2.9.2.2.3	WAQC180	
4	Produce the Standard Error Report if any Processing Options errors were detected in Step 2.	2.9.2.2.4	WAQC180	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1

Diagram No.: 2.9.2.2.1 **Description:** Verify header record

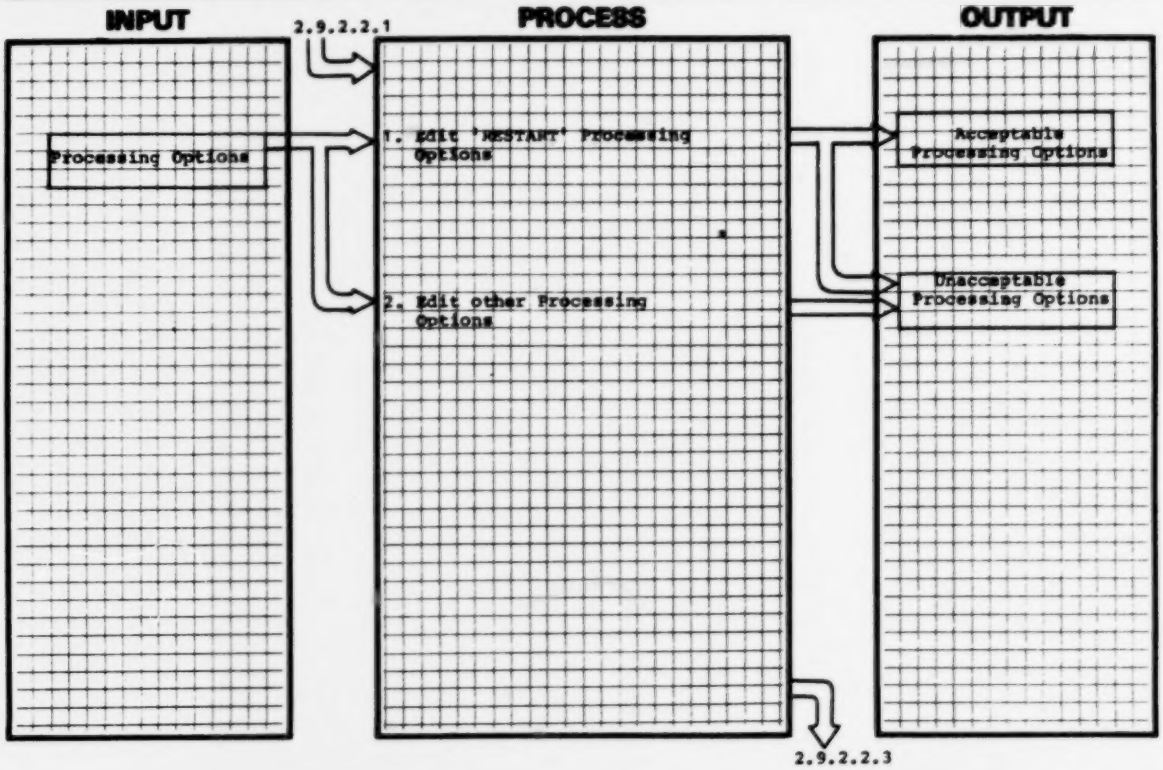


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header on the Contaminant Schedule File. If SAFI-H-S-SUMMARY-FORMS is set to 'Y', save SAFI-H-S-SCHED-DATE to print on the Form. If SAFI-H-S-SUMMARY-FORMS is set to 'N', processing terminates.		WAQC180	219

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1

Diagram No.: 2.9.2.2.2 **Description:** Edit 'RESTART' Processing Option

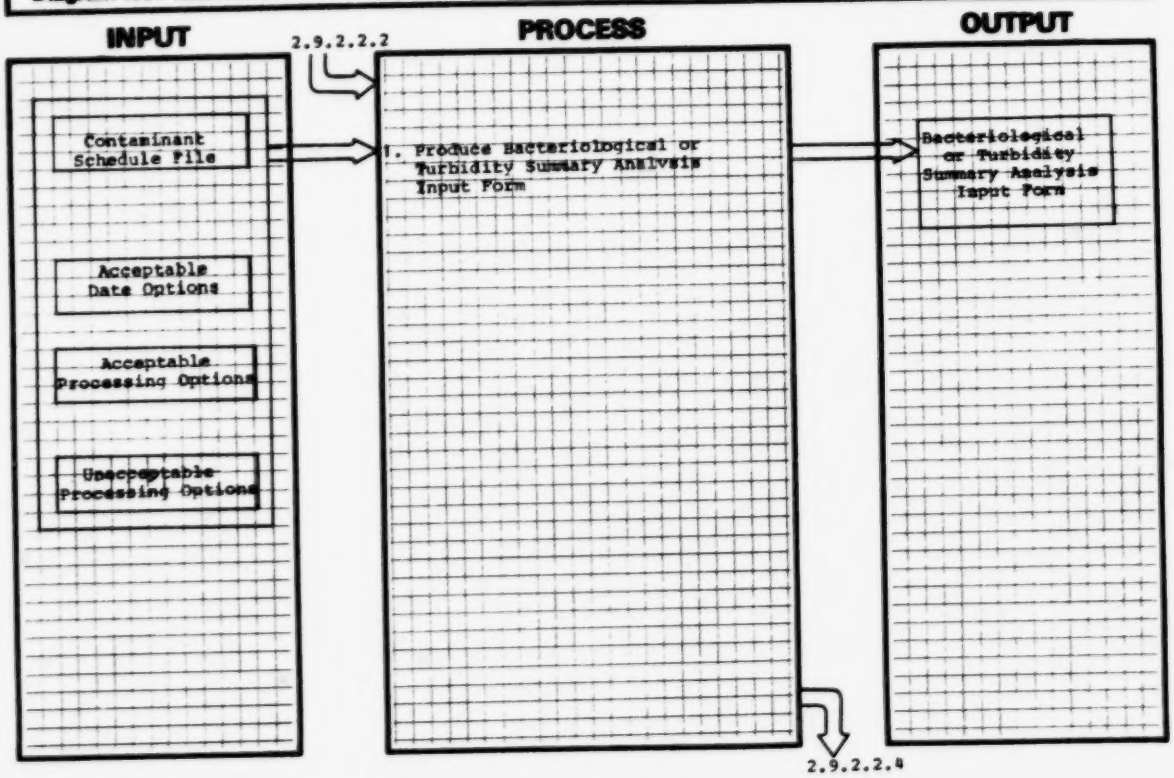


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the 'RESTART' Processing Options. If no 'RESTART' Processing Options Record is present, processing continues with the production of the report. If a 'RESTART' Processing Options Record is present, the Restart Number must be numeric, otherwise processing terminates. If more than one 'RESTART' Processing Options record is present, processing is terminated.		WAQC180	125 246
2	Edit Processing Options records with other than 'RESTART' in positions 1-7. If any of these are found, they are in error and processing is terminated. NOTE: Any Processing Options records in error along with associated error messages will be written on the Standard Error Report (see HIPO 2.9.2.2.4).		WAQC180	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 2

Diagram No.: 2.9.2.2.3 **Description:** Produce Bacterio. or Turbidity Sum. Analysis Input Form



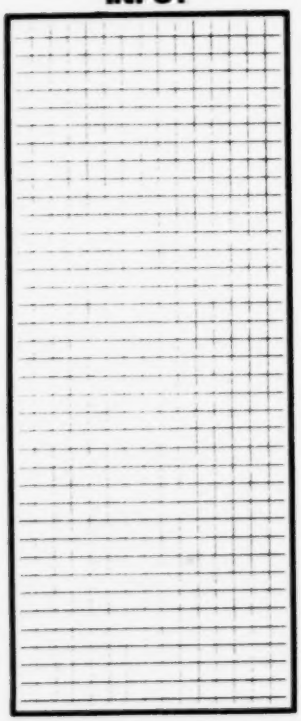
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Bacteriological or Turbidity Summary Analysis Input Form, using transaction code '07', as follows: a) Three dummy pages using X's in preprinted fields, are produced for use by the operator in aligning the form: b) The Input Forms are filled in as follows: 1) Move SAFI-S-PWS-ID to PWS-ID; 2) Move SAFI-S-TRANSACTION-CODE to TRANSACTION CODE; 3) Move SAFI-S-MAILING-ADDRESS to PUBLIC WATER SYSTEM NAME AND ADDRESS; 4) Move SAFI-S-CONTAMINANT-ID to CONTAMINANT ID; 5) Move SAFI-S-CONTAM-NAME to CONTAMINANT NAME; 6) Move SaFI-S-SAMPLE-PERIOD-START to SAMPLE PERIOD FROM; 7) Move SAFI-S-SAMPLE-PERIOD-END to SAMPLE PERIOD UNTIL; 8) Move 'D' to SAMPLE TYPE; 9) Move the saved PROC date off of the header to the date at the top of the Input Form; 10) If the first byte of the Contaminant ID is equal to '0', move '0' to the first position of ANALYSIS METHOD. If the first byte of the contaminant ID is equal to '3', move '3' to the first position of ANALYSIS METHOD.		WAQC180	220 402

MODEL STATE INFORMATION SYSTEM

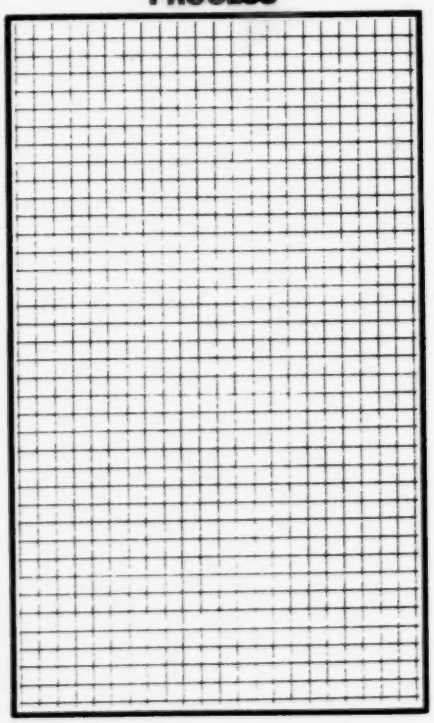
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-24-77 Page: 2 of 2

Diagram No.: 2.9.2.2.3 Description: Produce Bacterio. or Turbidity Sum. Analysis Input Form

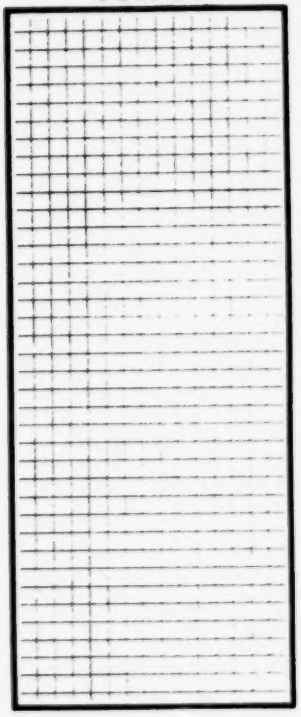
INPUT



PROCESS



OUTPUT

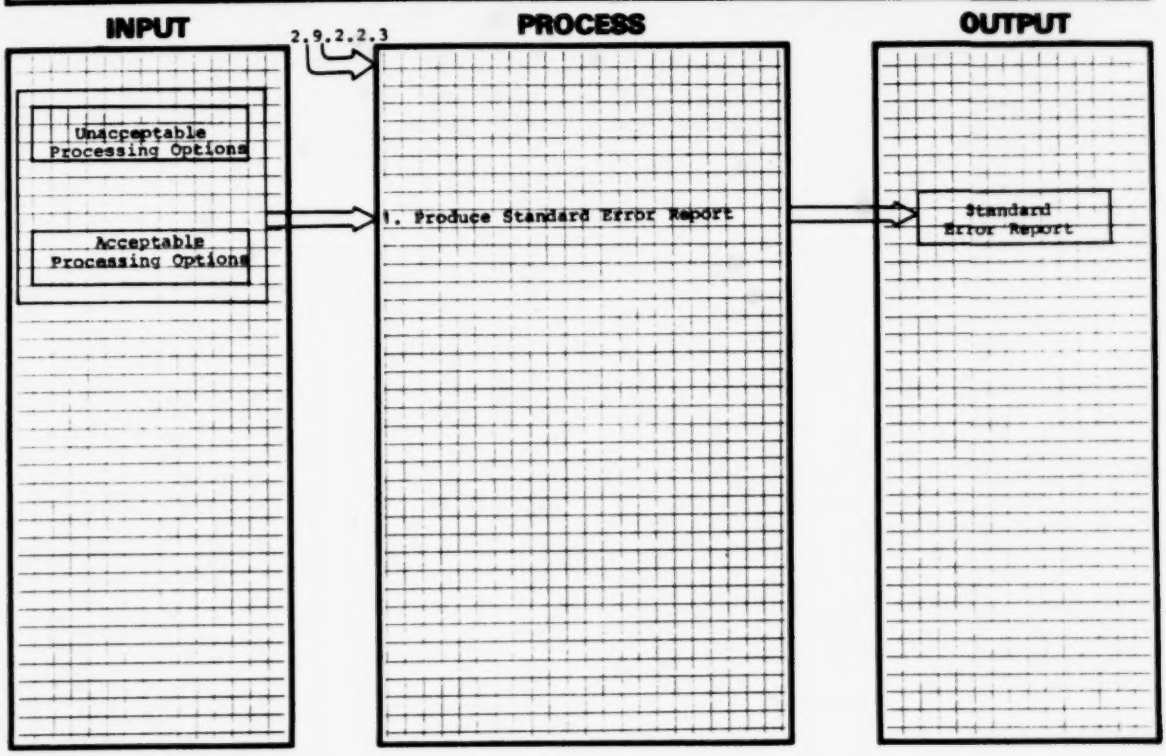


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	c) When a record is selected, a page will be produced. d) If an acceptable 'RESTART' Processing Options record is present, a switch is set which causes the Contaminant Schedule File to be read up to the record number as indicated on the 'RESTART' Processing Options record. If there are any unacceptable Processing Options records, no reports are produced and processing terminates. If there are no Processing Options records, normal report production is assumed beginning with the first report page.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1

Diagram No.: 2.9.2.2.4 **Description:** Produce Standard Error Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Error Report is produced only if there are any Processing Options records in error. The Processing Options records in error are printed along with associated error messages. The date obtained from the Contaminant Schedule File header record is used as the report date.		WAQC180	MSIS. 309

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC150
DATE: March 24, 1977

I. OBJECTIVES:

The objective of this program is to produce the Chemical or Radiological Analysis Input Form to be used by the Public Water Systems (PWS's) to report the results of Chemical or Radiological sample analyses to the state. These forms are turnaround documents used as input to the Water Quality Compliance Subsystem.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Contaminant Schedule File	SAFI-HEDR-SCHED-RECORD	WAQC.219
		SAFI-SCHED-RECORD	WAQC.220

B. Processing Options Record:

	NAME	FORM	EXHIBIT LAYOUT
1.	Restart File	WAQC.125	WAQC.246

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Error Report	MSIS.309

C. Turnaround Documents:

	NAME	EXHIBIT LAYOUT
1.	Chemical or Radiological Analysis Input Form	WAQC.400

IV. FUNCTIONS:

1. Verify the Contaminant Schedule File header record. If the report flag is not on, then terminate processing. The Contaminant Schedule File is externally sorted by Contaminant ID within Sample End Date within Public Water System (PWS)-ID, within Zip Code.

2. Edit the "RESTART" Processing Options records, if any.

3. Produce the Chemical or Radiological Analysis Input Form by selecting appropriate records from the Contaminant Schedule File.

4. Produce the Standard Error Report if any Processing Options in error were detected.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Restart Form for Jobs (WAQC150-180).

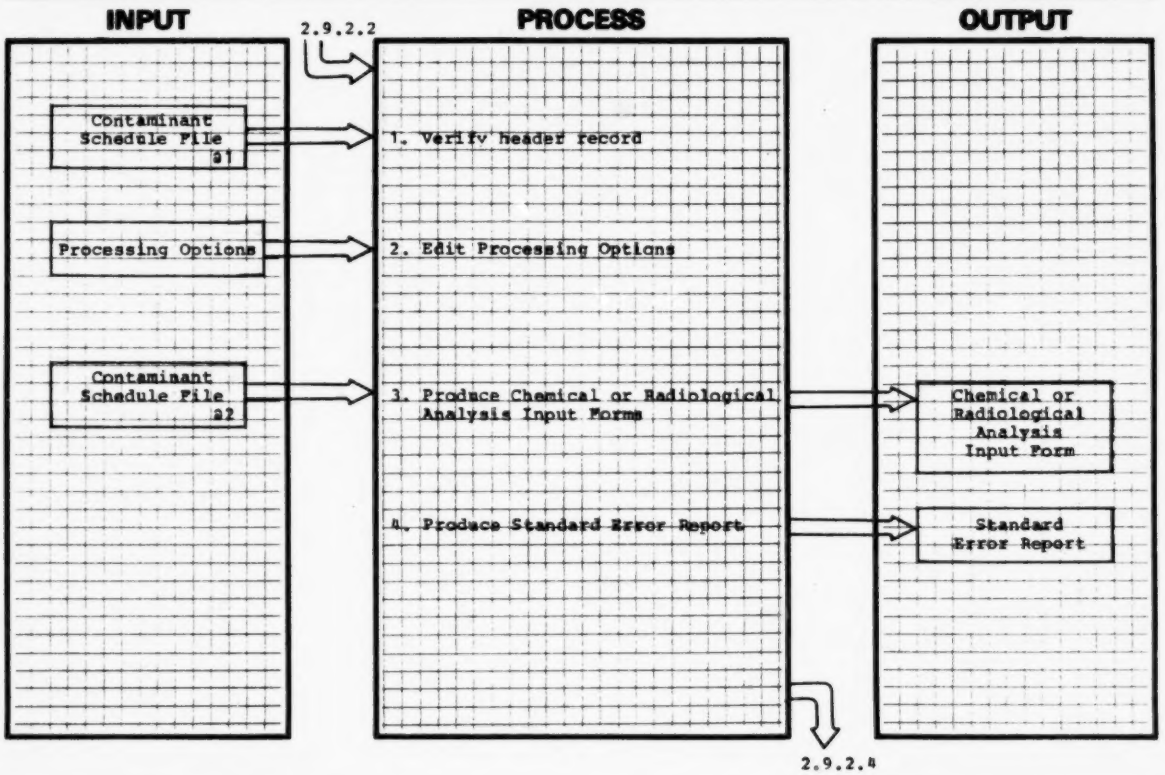
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1

Diagram No.: 2.9.2.3 **Description:** Produce Chemical or Radiological Analysis Input Form

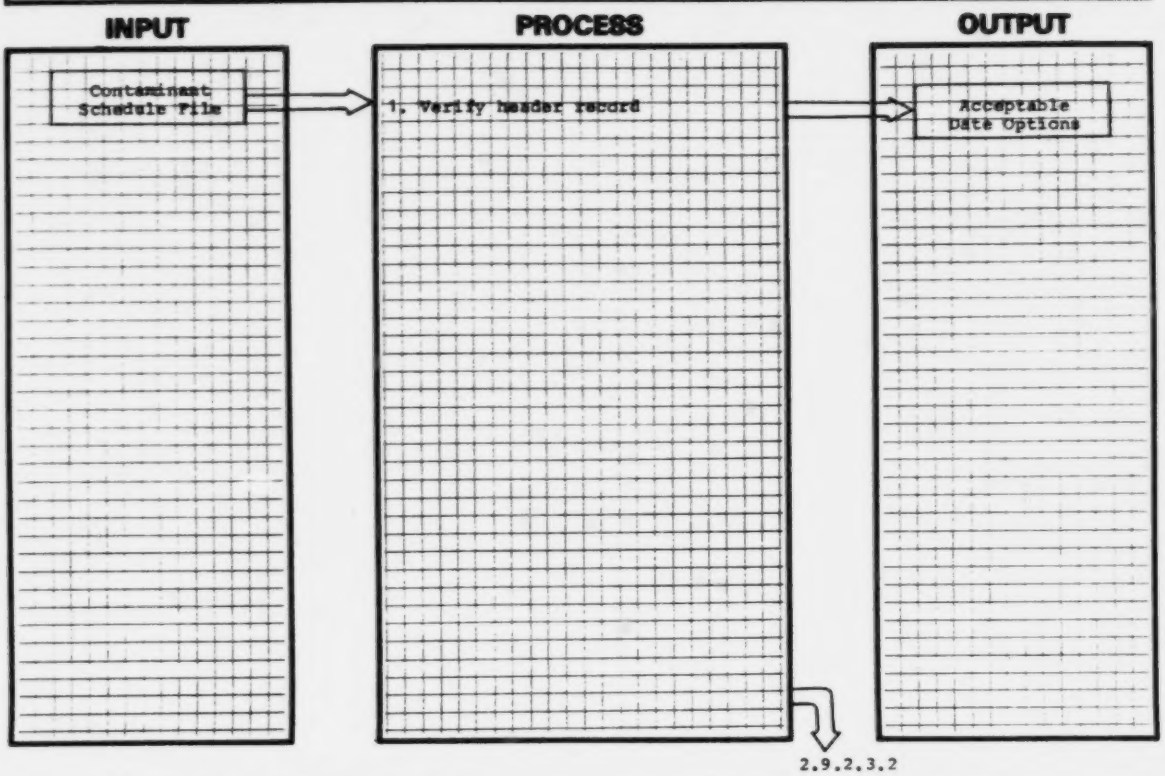


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record report flag. If the report flag is not equal to 'Y', then terminate processing.	2.9.2.3.1	WAQC150	
2	Edit the 'RESTART' Processing Options.	2.9.2.3.2	WAQC150	
3	Produce the Chemical or Radiological Analysis Input Form by selecting appropriate records based on transaction type '03' from the Contaminant Schedule File (CSF). This file is externally sorted by Contaminant ID within Sample End Date within Public Water System (PWS) ID within Zip Code.	2.9.2.3.3	WAQC150	
4	Produce the Standard Error Report if any Processing Options errors were detected in Step 2.	2.9.2.3.4	WAQC150	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-24-77 Page: 1 of 1

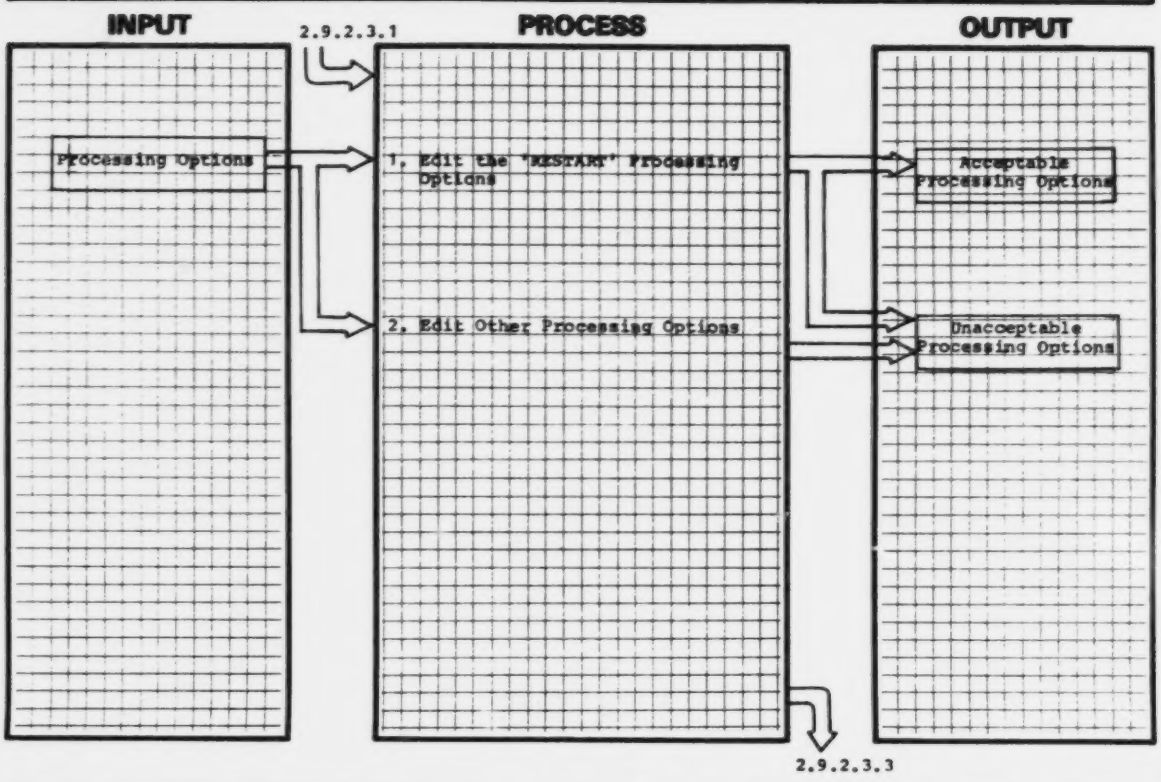
Diagram No.: 2.9.2.3.1 Description: Verify header record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record on the Contaminant Schedule File. If SAFI-H-S-SAMPLE-FORMS is set to 'Y', save SAFI-H-S-SCHED-DATE to put on the forms. If SAFI-H-S-SAMPLE-FORMS is set to 'N', processing is terminated.		WAQC150	219

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1
Diagram No.: 2.9.2.3.2 **Description:** Edit Processing Options

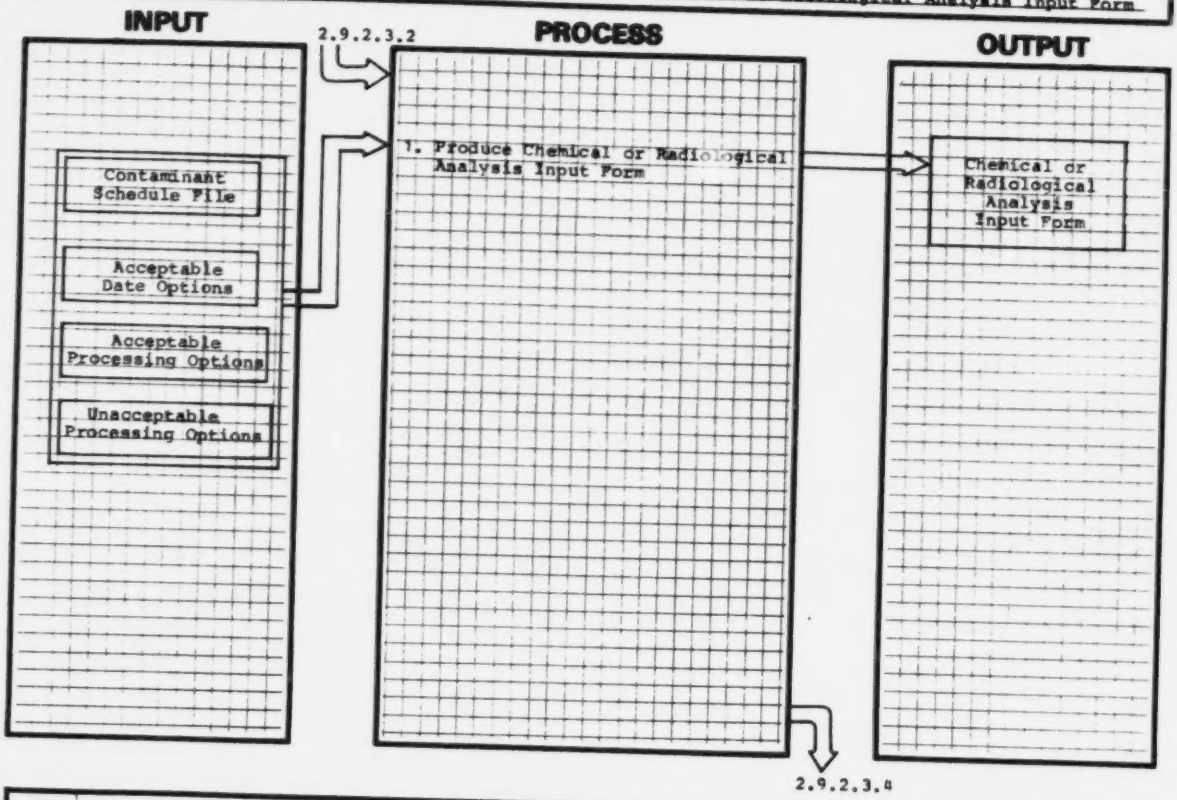


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'RESTART' in position 1-7. If no 'RESTART' Processing Options records are present, processing continues with the production of the reports. If a 'RESTART' Processing Options record is present, the Restart Number must be numeric, otherwise processing terminates. If more than one 'RESTART' Processing Options record is present processing is terminated.		WAQC150	125 246
2	Edit Processing Options records with other than 'RESTART' in position 1-7. If any of these are found, they are in error and processing is terminated. NOTE: Any Processing Options records in error along with associated error messages will be written on the Standard Error Report (see HIPO 2.9.2.3.4).		WAQC150	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 2

Diagram No.: 2.9.2.3.3 **Description:** Produce Chemical or Radiological Analysis Input Form

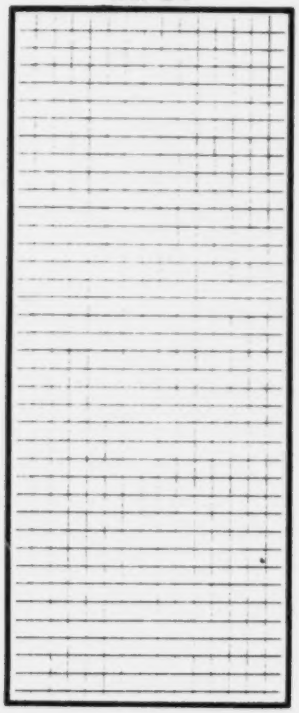


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Chemical or Radiological Analysis Input Form, using only records with transaction code '03', as follows: a) Three dummy pages using 'X's in preprinted fields are produced for use by the operator in aligning the forms; b) The Input forms are filled in as follows: 1) Move SAFI-S-PWS-ID to PWS ID; 2) Move SAFI-S-TRANSACTION-CODE to TRANSACTION CODE; 3) Move SAFI-S-MAILING-ADDRESS to PUBLIC WATER SYSTEM NAME AND ADDRESS; 4) Move SAFI-S-CONTAMINANT-ID to CONTAMINANT ID; 5) Move SAFI-S-CONTAM-NAME to CONTAMINANT NAME; 6) Move SAFI-S-SAMPLE-PERIOD-END to ON OR BEFORE date; 7) Move 'D' to SAMPLE TYPE; 8) Move the saved PROC date from the header to the date at the top to the Input form; 9) If the first byte of the Contaminant ID is equal to '1', move '1' to the first position of ANALYSIS METHOD. If the first byte of the contaminant ID is equal to '4', move '4' to the first position of ANALYSIS METHOD.		WAQC150	220 400

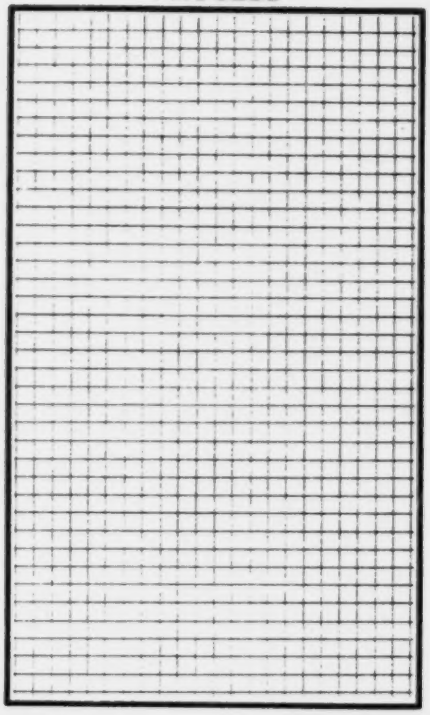
MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 2-22-77 **Page:** 2 of 2
Diagram No.: 2.9.2.3.3 **Description:** Produce Chemical or Radiological Analysis Input Form

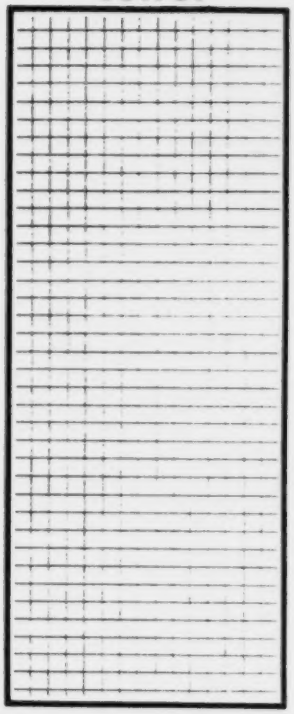
INPUT



PROCESS



OUTPUT

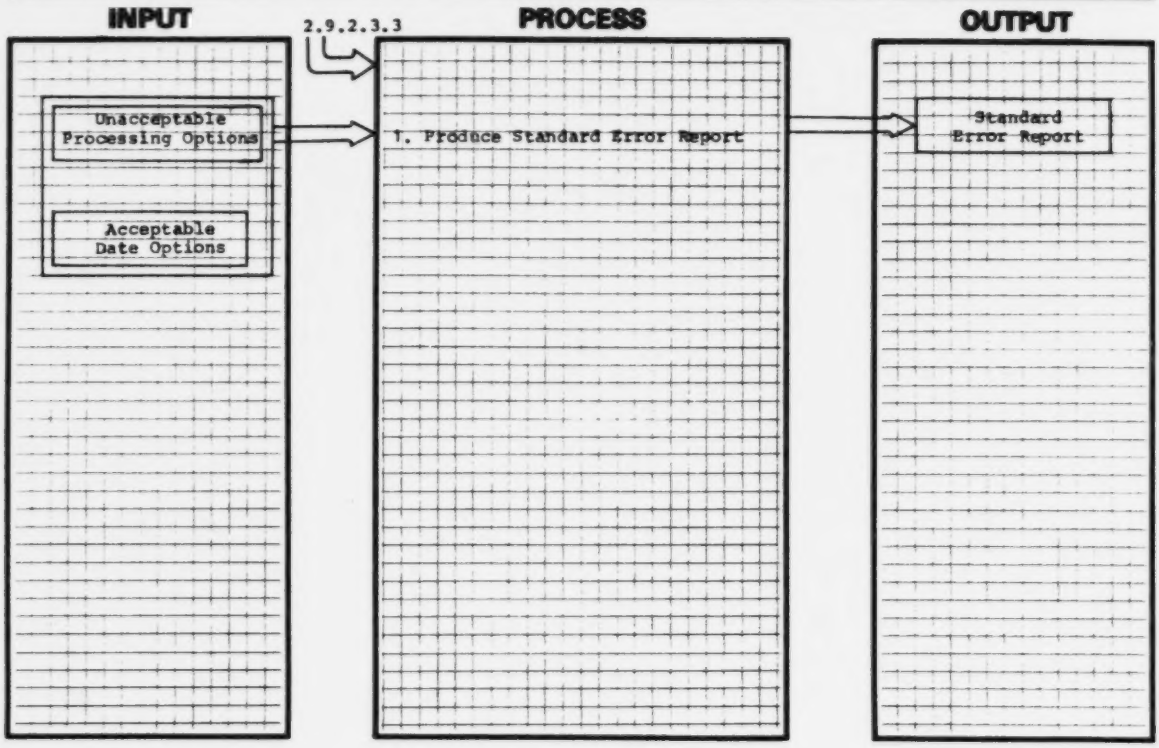


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	c) Page breaks are performed if any of the following changes occur: 1) PWS ID 2) Contaminant Group (first digit of the Contaminant ID) 3) SAMPLE END DATE d) If an acceptable 'RESTART' Processing Options record is present, a switch is set which causes those report pages with page numbers less then the page number specified on the 'RESTART' Processing Options record not to be printed. Once the page counter equals the Page number on the 'RESTART' Processing Options record, this switch is turned off and normal report production begins. If there are any unacceptable Processing Options records, no reports are produced and processing terminates. If there are no Processing Options records, normal report production is assumed beginning with the first report page.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** _____ **Page:** 1 of 1

Diagram No.: 2.9.2.3.4 **Description:** Produce Standard Error Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Error Report is produced only if there are any Processing Options records in error. The Processing Options records in error are printed along with associated error messages. The date obtained from the Contaminant Schedule File header record is used as the report date.		WAQC150	MSIS. 309

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC140
DATE: March 24, 1977

I. OBJECTIVES:

The objective of this program is to produce the Chemical/Radiological Scheduling Report which contains a list of all chemical and radiological samples scheduled for sampling and analysis by a Public Water System (PWS).

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Contaminant Schedule File	SAFI-HFDR-SCHED-RECORD	WAQC.219
		SAFI-SCHED-RECORD	WAQC.220

B. Processing Options Record:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Chemical/Radiological Scheduling Report	WAQC.319

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verify the Contaminant Schedule File header record. If the report flag is not on, then terminate processing. The Contaminant Schedule File is externally sorted by Sample End Date within Contaminant ID within PWS-ID within District within Region.

2. Produce the Chemical/Radiological Schedule Report by selecting appropriate records from the Contaminant Schedule File.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

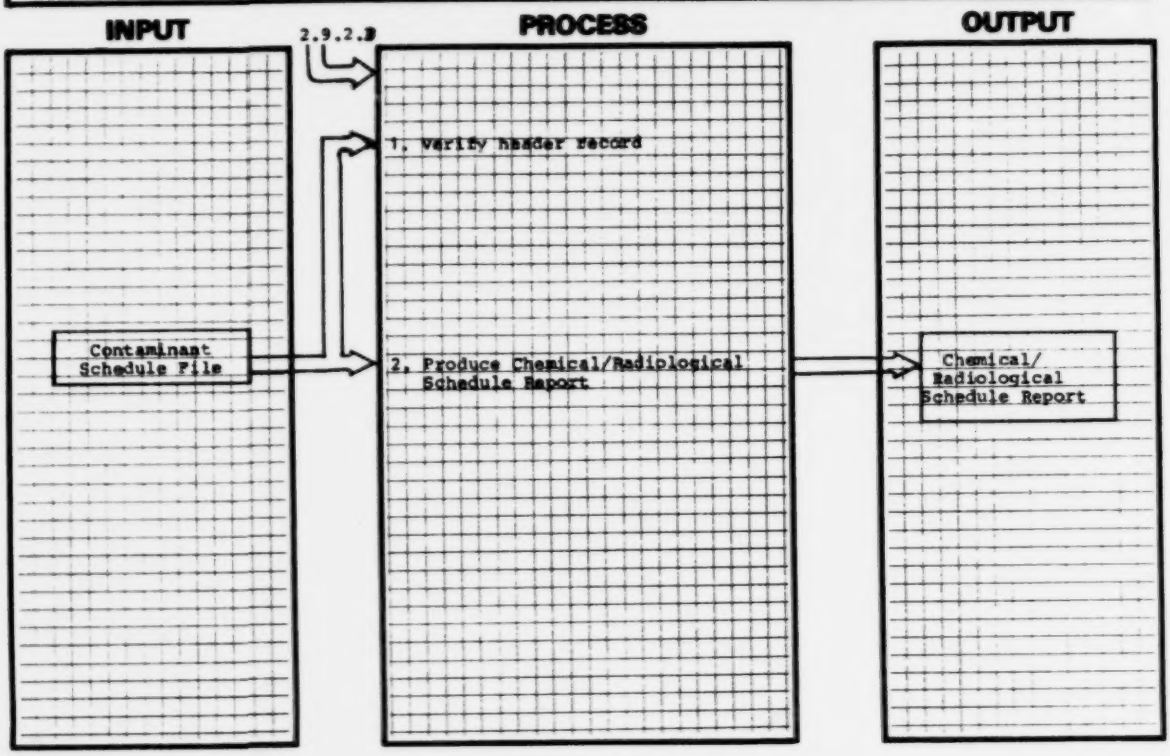
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Water Quality Compliance Date: 3-24-77 Page: 1 of 1

Diagram No.: 2.9.2.4 Description: Produce Chemical/Radiological Schedule Report

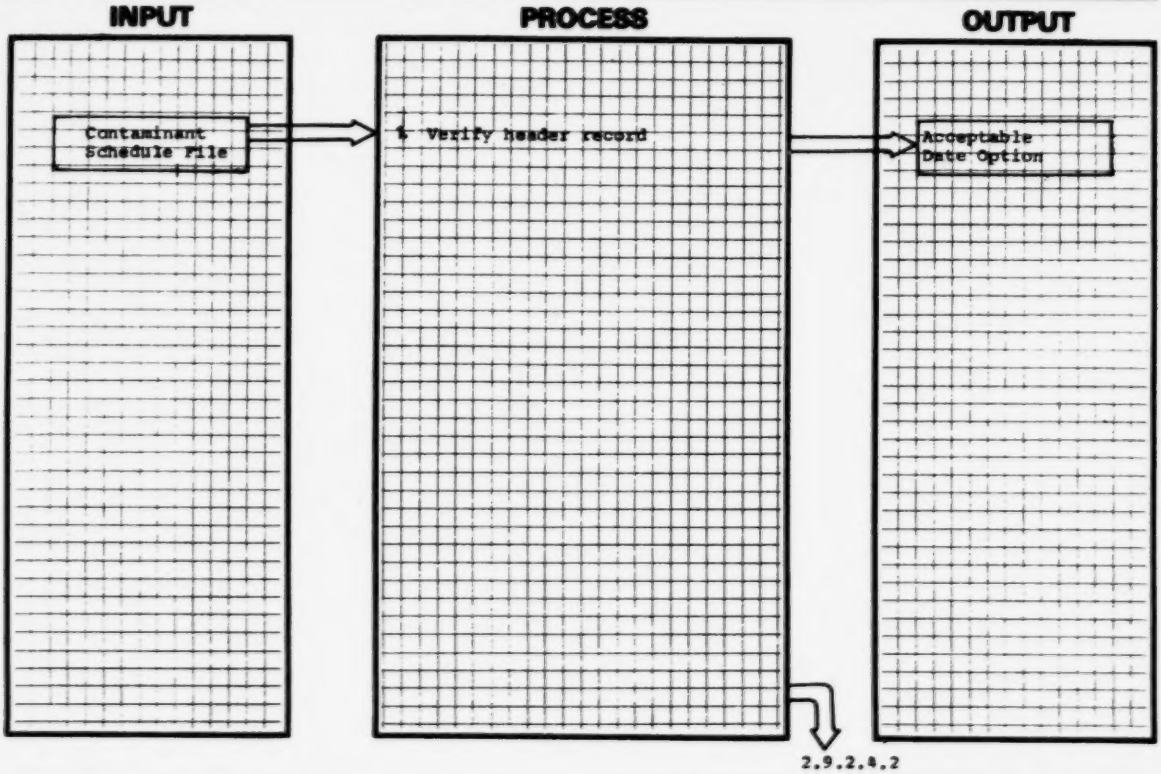


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record report flag. If the report flag is not equal to 'Y', terminate processing.	2.9.2.4.1	WAQC180	
2	Produce the Chemical/Radiological Schedule Report by selecting appropriate records with transaction type '03', from the Contaminant Schedule File. This file is externally sorted by Sample End Date within Contaminant ID within PWS ID within District within Region.	2.9.2.4.2	WAQC180	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1

Diagram No.: 2.9.2.4.1 **Description:** Verify header record

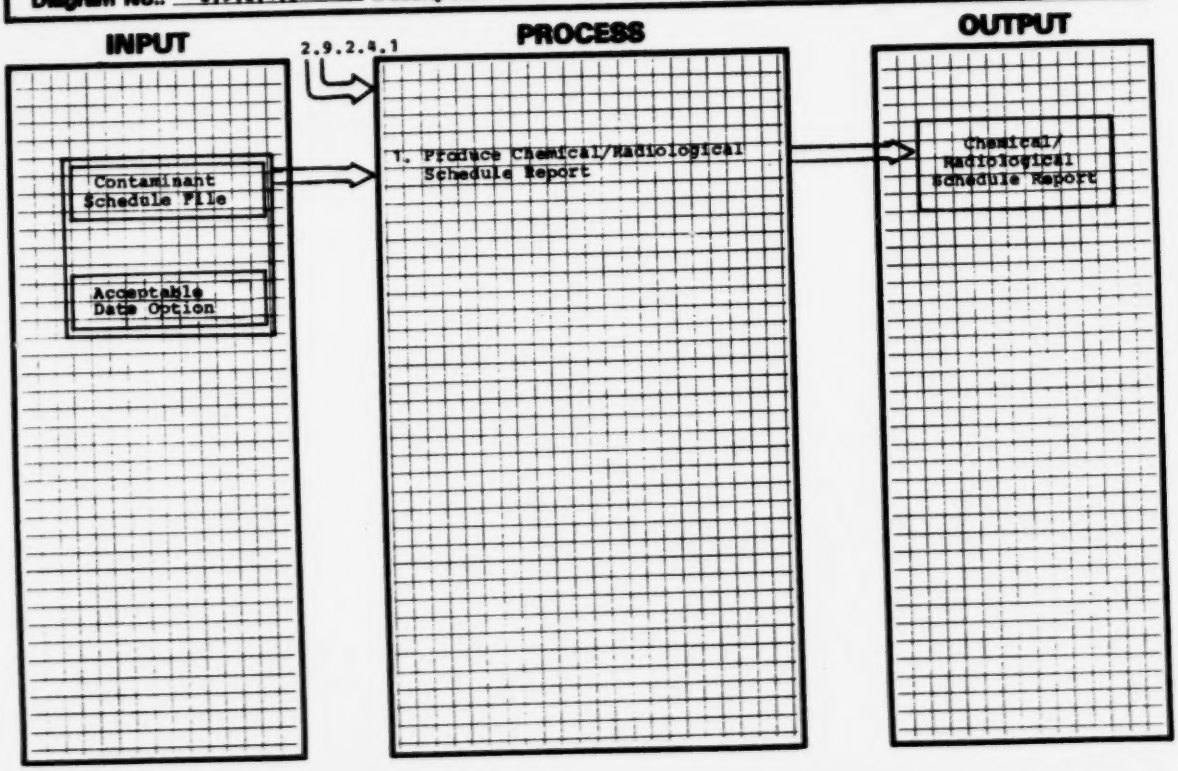


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1.	Verify the header record on the Contaminant Schedule File (CSF). If SAFI-H-S-SCHED-REPORT is set to 'Y', save SAFI-H-S-SCHED-DATE to put on the forms. If SAFI-H-S-SCHED-REPORT is set to 'N', processing is terminated without report production.		WAQC140	219

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-24-77 Page: 1 of 2

Diagram No.: 2.9.2.4.2 Description: Produce Chemical/Radiological Schedule Report



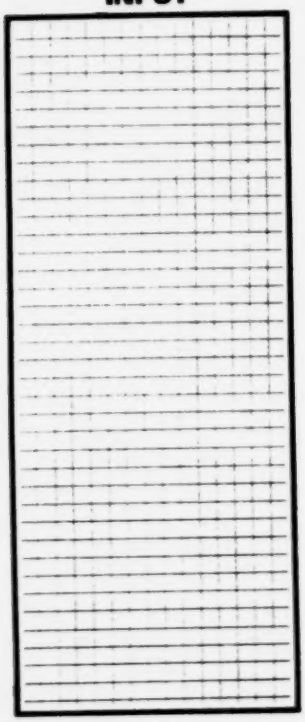
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Chemical/Radiological Schedule report using only records with trans code '03' as follows: a) Fill the report header as follows: 1) Move the saved SAFI-H-S-SCHED-DATE to the date; b) Fill the first detail line as follows: 1) Move SAFI-S-PWS-REGION to REGION; 2) Move SAFI-S-PWS-DISTRICT to DISTRICT; 3) Move SAFI-S-PWS-ID to PWS ID Number; 4) Move SAFI-S-MAILING-NAME to PUBLIC WATER SYSTEM NAME; 5) Move SAFI-S-PWS-TYPE to PWS TYPE; 6) Move SAFI-S-PWS-POPULATION to POPULATION; 7) Move SAFI-S-CONTAMINANT-ID to CONTAMINANT ID; 8) Move SAFI-S-CONTAM-NAME to CONTAMINANT NAME; 9) Move SAFI-S-SAMPLE-PERIOD-START to SAMPLING PERIOD START; 10) Move SAFI-S-SAMPLE-PERIOD-END to SAMPLING PERIOD END; c) Fill in the associated detail lines as follows: 1) Move SAFI-S-CONTAMINANT-ID to CONTAMINANT ID; 2) Move SAFI-S-CONTAM-NAME to CONTAMINANT NAME; 3) Move SAFI-S-SAMPLE-PERIOD-START to SAMPLING PERIOD START; 4) Move SAFI-S-SAMPLE PERIOD-END to SAMPLING PERIOD END;		WAQC140	220 319

MODEL STATE INFORMATION SYSTEM

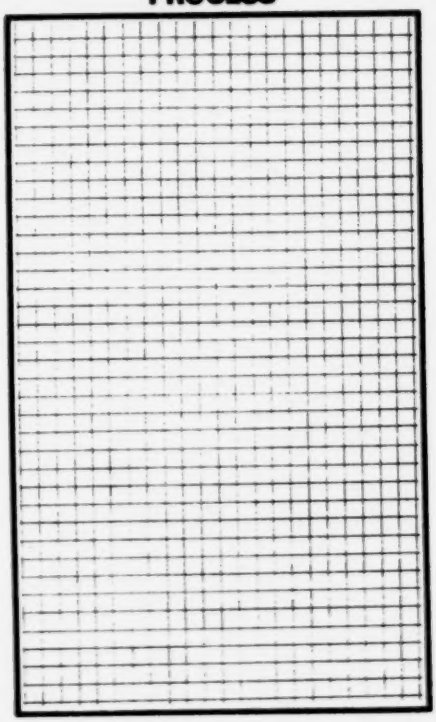
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-24-77 Page: 2 of 2

Diagram No.: 2.9.2.4.2 Description: Process Chemical/Radiological Schedule Report

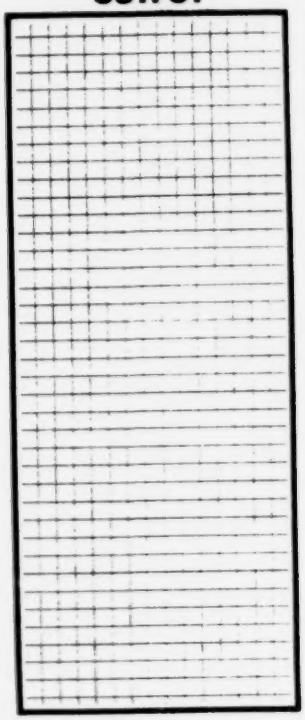
INPUT



PROCESS



OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	d) If the PWS ID changes, the total number of samples by contaminant group (the first digit of the Contaminant ID) followed by a new page header is produced. If the District changes, the total number of samples for that last PWS and the District totals are produced, followed by a new page header. If the Region changes, the total number of samples for that last PWS, the District totals, and the Region totals are produced followed by a new page header. At the end of the report, the total number of samples for that last PWS, the District totals, the Region totals, and the State totals are produced. Totals are obtained by counting records within a Contaminant Group (see below). e) Contaminant Group (the first one or two digits of the Contaminant ID) is checked for the following: 1) '1' - Inorganic Chemicals; 2) '2' - Organic Chemicals; 3) '40' - Gross Alpha-Natural Radionuclide; 4) '41', '42', '43' - Gross Beta-Man made Radionuclide. If any other Contaminant Group is detected, it is not used to produce this report.			

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC200
DATE: March 24, 1977

I. OBJECTIVES:

The objective of this program is to produce mailing labels for mailing material to local governments, cities, consultants and other addressee types to be included on a mailing distribution list. A Monthly Operations Report Update Form to be used for updating the Monthly Operations Reporting information on the Public Water File (PWF) is also produced for each Public Water System (PWS) scheduled.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Operations Report/ Mailing Label File	SAFI-CARD-LABEL-RECORD	WAQC.242
		SAFI-HEDR-CARD-LABEL-RECORD	WAQC.243

B. Processing Options Record:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Mailing Labels	WAQC.329
2.	Monthly Operations Report Update Form	WAQC.330

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Verifv the header record. If the processing indicator is off, then processing terminates.

2. Produce Mailing Labels for the Public Water System (PWS) in the quantity indicated by the Operations Report/Mailing Label File record.

3. Produce Monthly Operations Report Update Forms for the PWS indicated on the record.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

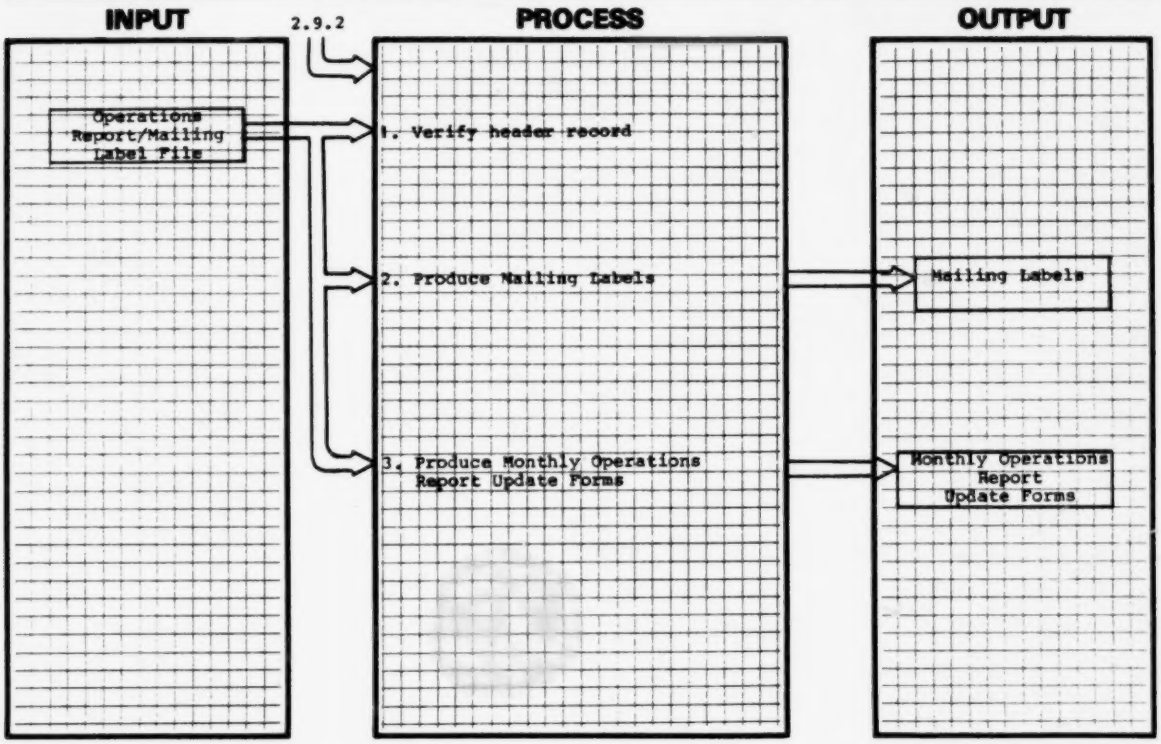
Not Applicable

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 **of** 1
Diagram No.: 2.9.3 **Description:** Produce Mthly. Operations Rpt. Update Forms and Mail. Labels

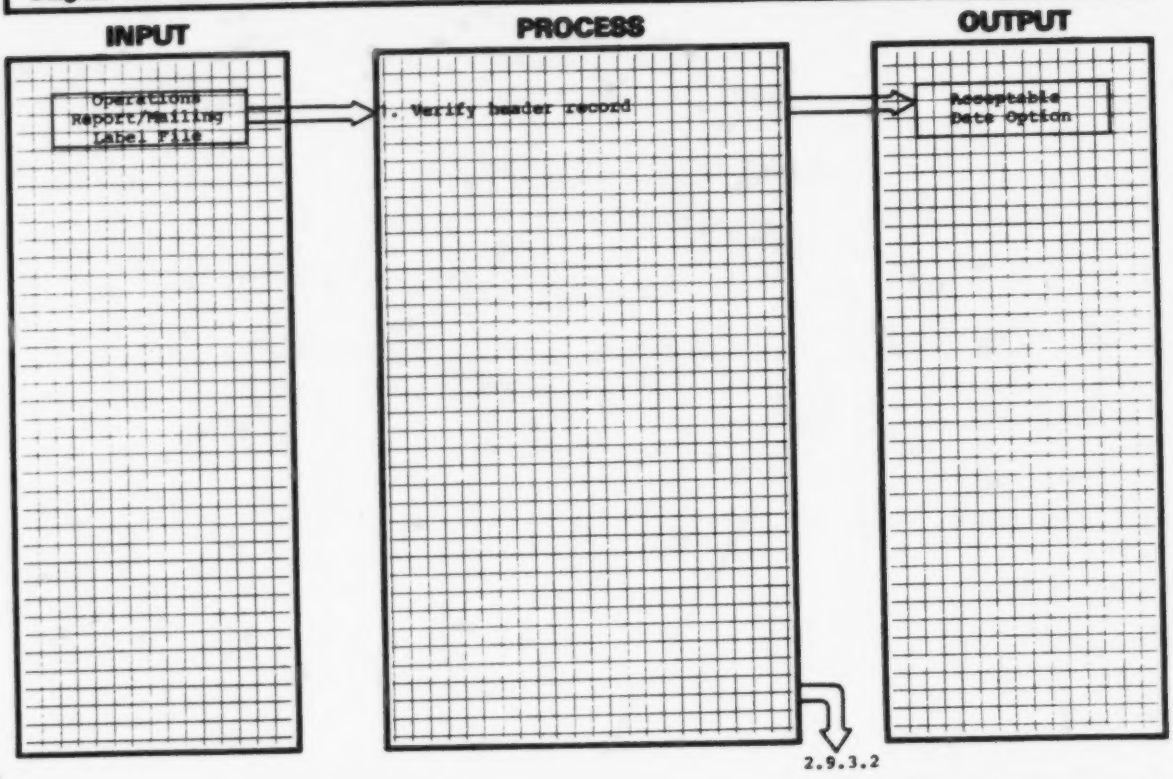


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record on the Operations Report/Mailing Label File. If the processing indicator is off, processing terminates.	2.9.3.1	WAQC200	
2	Produce the requested number of mailing labels indicated on the Operations Report/Mailing Label File record.	2.9.3.2	WAQC200	
3	Produce Monthly Operations Report Update Forms when indicated on an Operations Report/Mailing Label File record.	2.9.3.3	WAQC200	
	NOTE: The Operations Report Mailing Label File is externally sorted by PWS-ID within Zip Code.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 3-24-77 Page: 1 of 1

Diagram No.: 2.9.3.1 Description: Verify header record

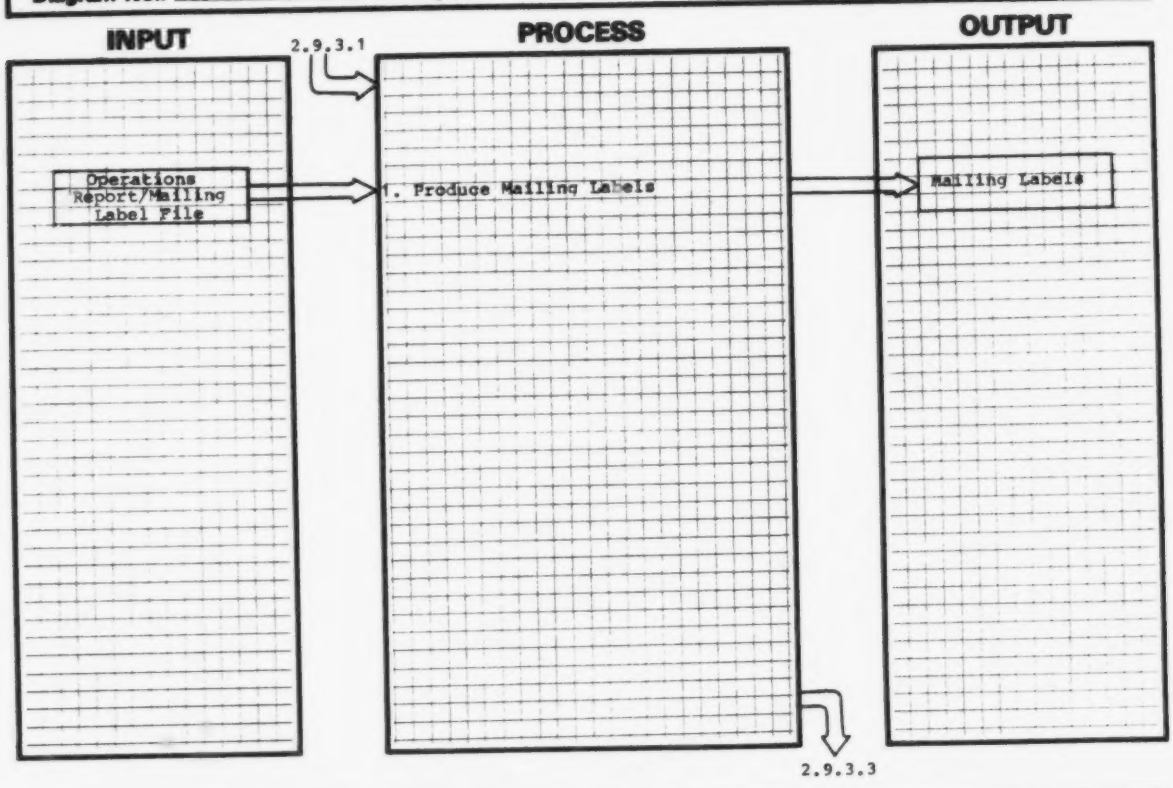


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record on the Operations Report/Mailing Label File. If the SAFI-H-C-PROCESS-INDICATOR is 'Y', labels and/or forms are to be produced. If SAFI-H-C-PROCESS-INDICATOR is 'N', processing terminates.		WAQC200	2&3

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1

Diagram No.: 2.9.3.2 **Description:** Produce Mailing Labels

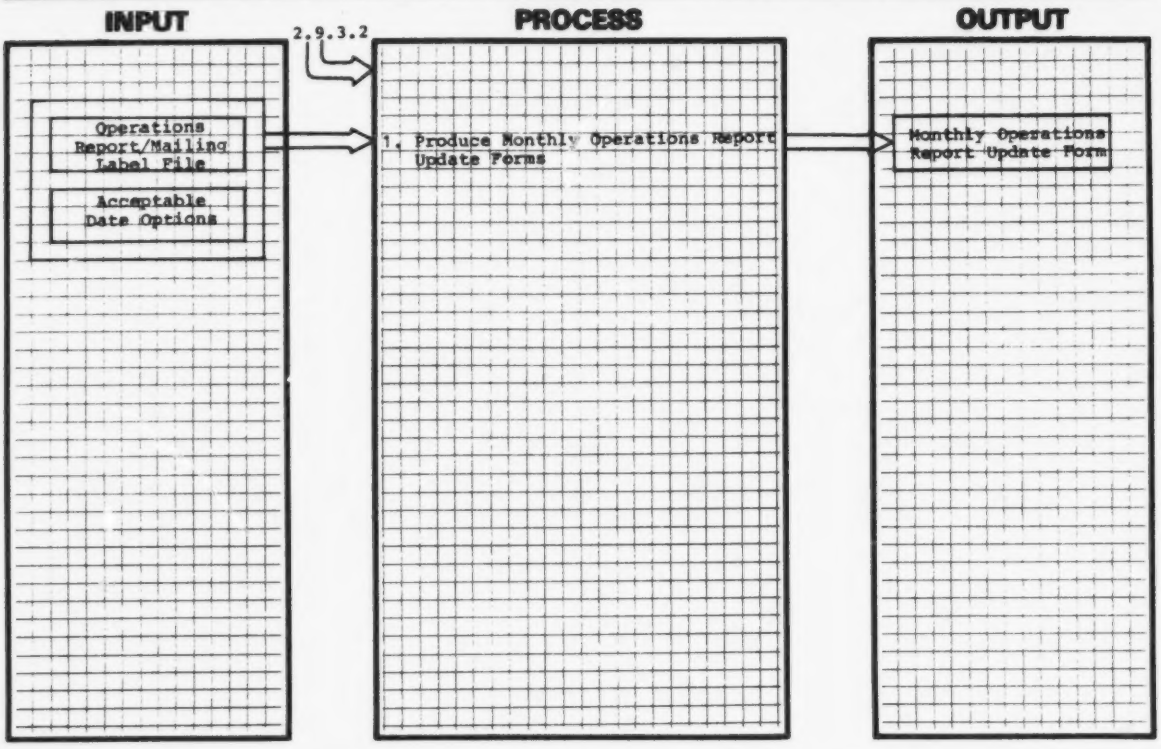


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Mailing Labels are to be produced as follows: a) One page of dummy labels with X's in all fields, are produced for use in operator alignment; b) Mailing labels are filled in as follows: 1) Move SAFI-C-MAILING-NAME to NAME; 2) Move SAFI-C-MAILING-STREET to STREET; 3) Move SAFI-C-MAILING-CITY to CITY; 4) Move SAFI-C-MILING-STATE to STATE; 5) Move SAFI-C-MAILING-ZIP to Zip; c) Mailing labels are to be produced on three-up label forms. d) The number of labels to be produced is determined by SAFI-NUMBER-LABELS on the Operations Report/Mailing Label File. NOTE: Mailing Labels are only produced when SAFI-LABELS-FLAG is 'Y'.		WAQC200	242 329

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 3-24-77 **Page:** 1 of 1

Diagram No.: 2.9.3.3 **Description:** Produce Monthly Operations Report Update Forms



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Monthly Operations Report Update Forms are filled in as follows: 1) Move SAFI-C-PWS-ID to PWS ID and to Card Column 1-7; 2) Move SAFI-C-MAILING-NAME to NAME; 3) Move SAFI-C-MAILING STREET to STREET; 4) Move SAFI-C-MAILING CITY to CITY; 5) Move SAFI-C-MAILING-STATE to STATE; 6) Move SAFI-C-MAILING-ZIP to ZIP; 7) Move SAFI-C-DATE-NEW-REPORT to CARD COLUMN 16-19; 8) Translate the first two bytes of SAFI-C-DATE-NEW-REPORT into the name of the month. Example: SAFI-C-DATE-NEW-REPORT equal to 0177 translated version JANUARY. Move the translated version to 'OPERATION REPORT FOR xxxxxxxxx'. NOTE: These forms are produced only when SAFI-CARD-FLAG is 'Y'.		WAQC200	242 330

Water Quality Compliance Subsystem .2
Purge SAF .10
Edit Processing Options .1
Purge SAF .2
Produce SAF Purge Statistics Report .3

VISUAL TABLE OF CONTENTS

2 - Water Quality Compliance Subsystem
2.10 - Purge Sample Analysis File (SAF)
2.10.1 - Edit Processing Options
2.10.2 - Purge Sample Analysis File (SAF)
2.10.3 - Produce Sample Analysis File (SAF) Purge Statistics Report

Diagram Type: VTOC

Diagram No: 2.10

Subsystem: Water Quality Compliance

Description: Purge Sample Analysis File (SAF)

NARRATIVE

SUBSYSTEM: Water Quality Compliance
PROGRAM NAME: WAQC220
DATE: 12/14/76

I. OBJECTIVES:

The objective of this program is to purge records from the Sample Analysis File (SAF) that have a sample date less than the Processing Options purge date and Contaminant Group equal to the Contaminant Group on the Processing Options record.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Sample Analysis File	SAF-RECORD	WAQC.254

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options Record	SAFI-PROC-PURGE-RECORD	WAQC.113	WAQC.215

III. OUTPUTS:

A. Record Layout:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Sample Analysis File	SAF-RECORD	WAQC.254
2.	Purged Sample Analysis File	SAF-RECORD	WAQC.254

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Sample Analysis File Purge Report	WAQC.315
2.	Sample Analysis File Purge Statistics Report	WAQC.316 MSIS.309

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Edit the Processing Options for errors. The 'PROC' record is edited for date errors and for invalid Purge Report Processing Options. Any errors will produce messages on the Sample Analysis File (SAF) Purge Statistics Report and cause job execution to terminate.

2. Purge records from the SAF if the sample date is less than the purge date and the contaminant group on the SAF is equal to the contaminant group on the Processing Options record. Write the purged records on the SAF Purge Report and the Purged SAF and the remaining records on the new SAF.

3. Produce the SAF Purge Statistics Report with running sums and any Processing Options errors that occurred.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

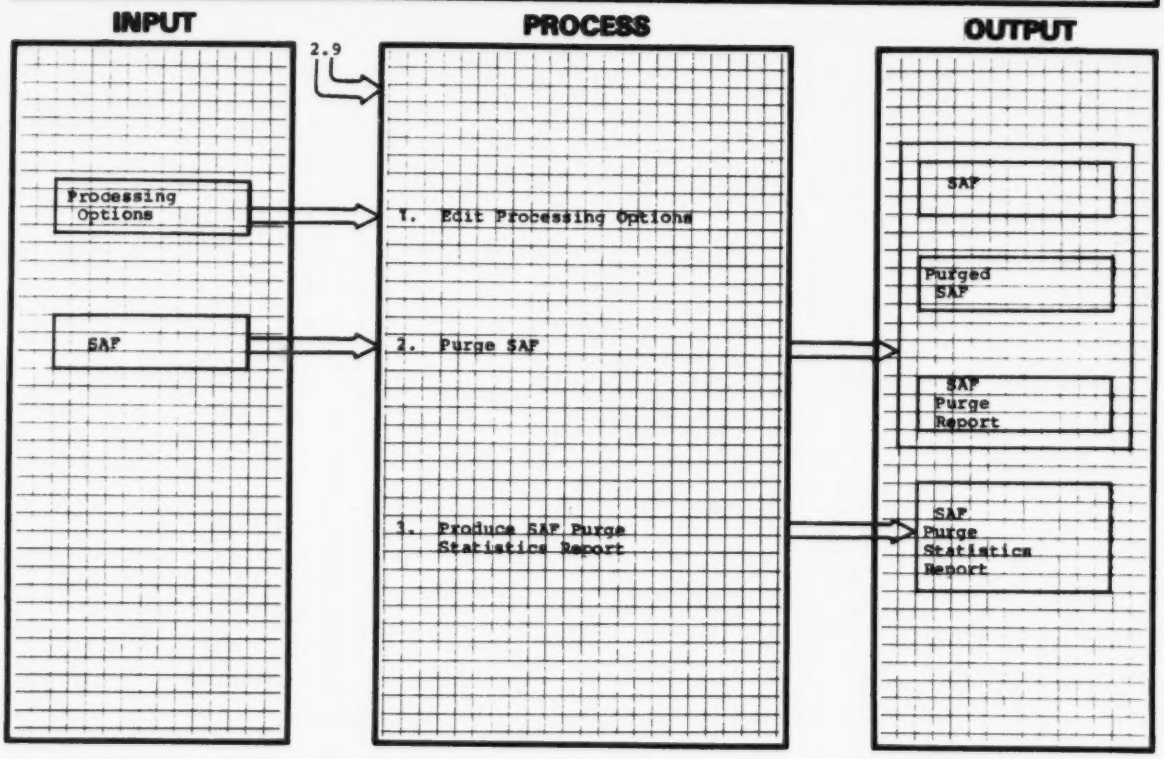
B. Data Element Description:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Water Quality Compliance **Date:** 12-14-76 **Page:** 1 of 1

Diagram No.: 2.10 **Description:** Sample Analysis File Purge

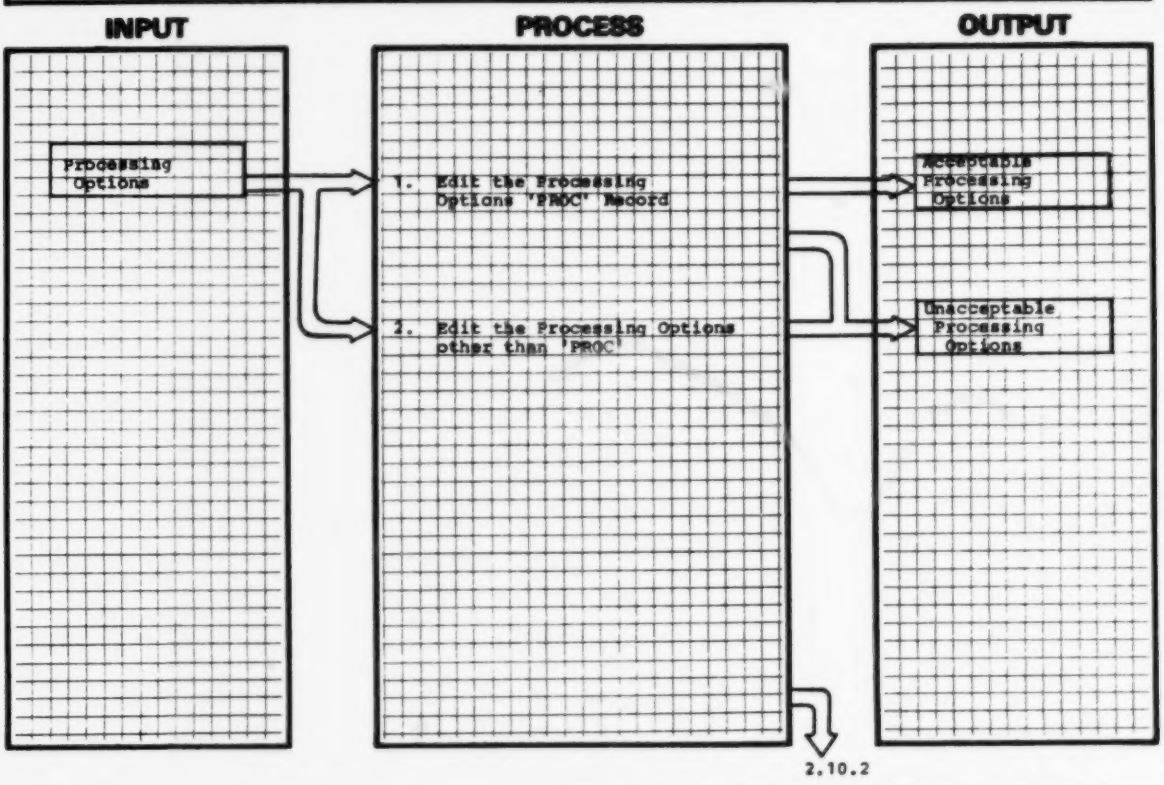


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the 'PROC' Processing Option. If any Processing Option is in error, program execution terminates.	2.10.1	WAQC220	
2	Purge the Sample Analysis File (SAF) by deleting groups of records with a sample date on the SAF less than the Processing Options purge date and contaminant group on the SAF the same as specified on the Processing Options record. Write the purged records on the SAF Purge Report and the purged SAF and the remaining records on the new SAF.	2.10.2	WAQC220	
3	Produce the SAF Purge Statistics Report with running sums or any Processing Options errors that occurred.	2.10.3	WAQC220	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Water Quality Compliance Date: 12-14-76 Page: 1 of 2

Diagram No.: 2.10.1 Description: Edit Processing Options



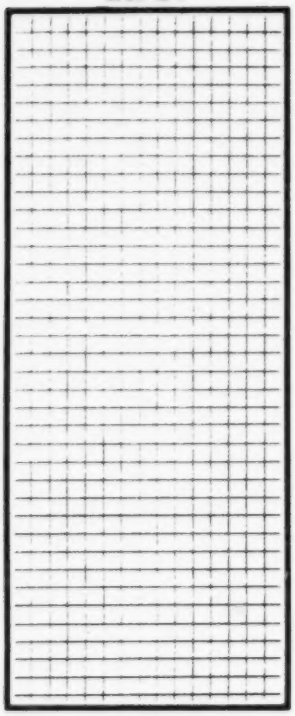
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'PROC' in positions 1-4 of the record as follows: a. If 'PROC' is not present, move the message 'ERROR - NO PROC RECORDS WERE PROVIDED' to the error message area. If more than one 'PROC' record is present, move the message 'ERROR - MORE THAN ONE PROC RECORD SUPPLIED' to the error message area. b. If positions 5-10 do not contain a valid date, move the message 'ERROR - PROC RECORD CONTAINS AN INVALID DATE' to the error message area. c. If positions 14-19, 21-26, 28-33, 35-40, and 42-47 do not contain valid dates, are not blank, or any one of these dates are greater than the date in positions 5-10, move the message 'ERROR - PROC RECORD CONTAINS AN INVALID DATE' to the error message area. d. If position 49 does not contain a 'Y' or 'N', move the message 'ERROR - PROC RECORD CONTAINS INVALID PRINT CODE' to the error message area. If other than a 'Y' or 'N', default to 'N'. NOTE: All fields are edited even though a previous error has been detected. If an error was detected, an image of the Processing Options record and all associated error messages will be printed on the Sample Analysis File (SAF) Purge Statistics Report and program execution will terminate except for an error in column 49 where the default is 'N' and execution continues.		WAQC220	113 215 MSIS. 309

MODEL STATE INFORMATION SYSTEM

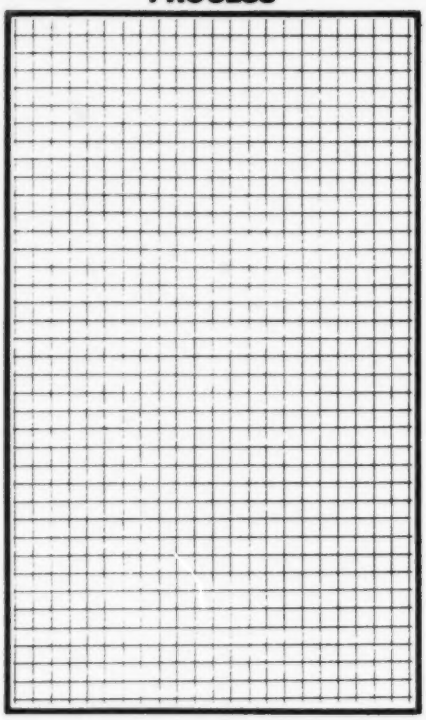
Diagram Type: Detail Subsystem: Water Quality Compliance Date: 12-14-76 Page: 2 of 2

Diagram No.: 2.10.1 Description: Edit Processing Options

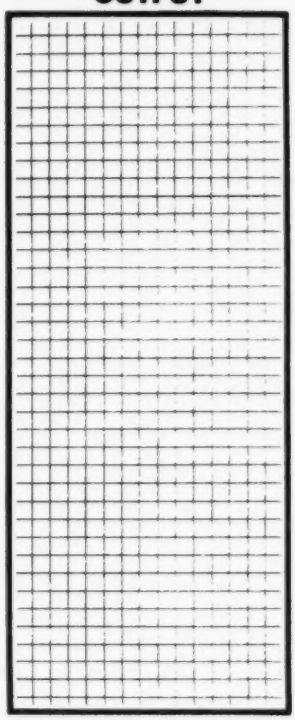
INPUT



PROCESS



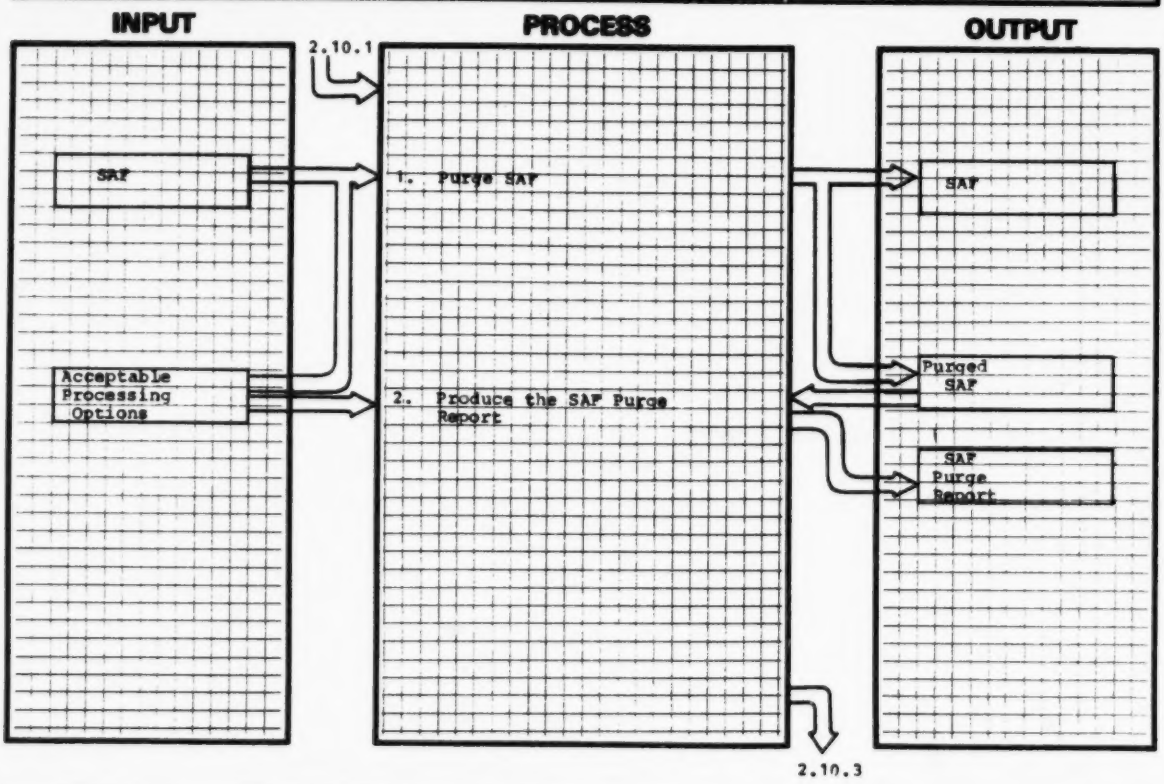
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	Edit the Processing Options record(s) for other than 'PROC' in positions 1-4. If found, the message 'ERROR - RECORD TYPE NOT PROC' is moved to the error message error and processing terminates. If an error has been detected, an image of the Processing Options record and all associated error messages are to be printed on the Sample Analysis File (SAF) Purge Statistics Report.		WAQC220	113 215 MSIS. 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12-14-76 **Page:** 1 of 1
Diagram No.: 2.10.2 **Description:** Purge Sample Analysis File (SAF)

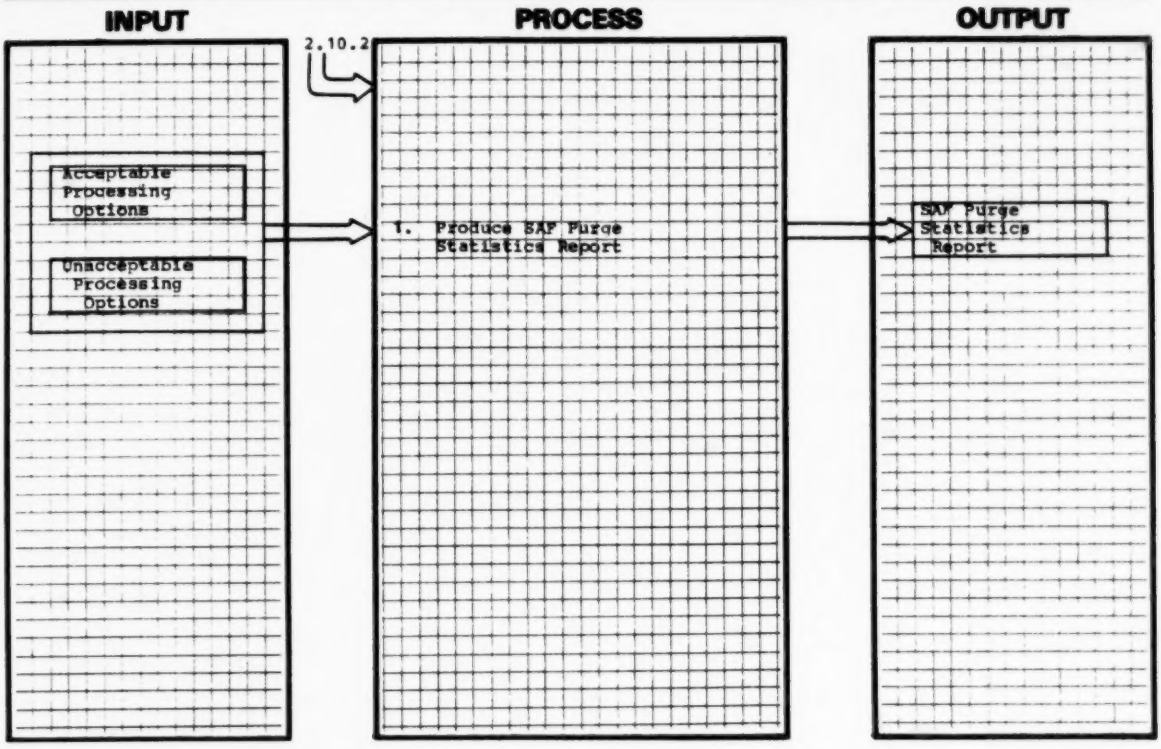


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Purge records from the Sample Analysis File (SAF) if the sample date is less than the Processing Options purge date and the contaminant group is the same as specified on the Processing Options record. A blank date means that contaminant group is not to be purged. Records to be purged are written to the SAF Purge Report and the purged SAF and the remaining records to the new SAF.		WAQC220	315 254
2	Produce the SAF Purge Report consisting of records purged from the SAF. The report is printed in input order and involves printing the entire record with the record key separated from the rest of the record on the report. This report is only produced if a 'Y' has been entered in position 89 of the 'PROC' record.		WAQC220	315

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Water Quality Compliance **Date:** 12-14-76 **Page:** 1 of 1

Diagram No.: 2.10.3 **Description:** Produce Standard Update Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Sample Analysis File (SAF) Purge Statistics Report is produced in either of two formats: a. During the update process, running sums were accumulated for: 1) Number of records originally on the file, 2) Number of records purged this run, 3) Number of records now on file. The totals 2 and 3 are also computed as a percent of 1. Results are written on the SAF Purge Statistics Report. b. If any Processing Options are in error, error messages are produced instead of the totals in 1.a..		WAQC220	316 MSIS. 309

Turbidity Appendices

Appendix A.1

Determination of compliance period (CPD) dates:

- input consists of current processing date and Lag time from the "PROC" options, found in the header record of the input SAF, and compliance cycle number (CC) from the PWF or processing options.
- convert processing date to Julian format.
- subtract Lag
- re-convert to Calendar format: (M, D, Y)
- determine CPD start month(MN):

$$\text{CPD start month} = \begin{cases} M - 1 & \text{if } D \geq CC \\ M - 2 & \text{if } D < CC \end{cases}$$

- set CPD start day (DA) = CC
- make necessary adjustments for end of year if above computations yield MN < 1
- CPD start date is (MN, DA, Y) converted to Julian format
- CPD end date is (MN+1, DA-1, Y) converted to Julian format

Appendix B.1

PWS exclusions:

A PWS is excluded from Turbidity processing for any of the following reasons:

1. PWS is inactive:

   PWF-PLANT-ACTIVITY = "I"

2. PWS is a consecutive water supplier:

   PWF-PLANT-CONSEC-INDICATOR = 1

3. PWS is regulated by neither Federal nor State regulations:

   PWF-STATE-REGULATE-BY = "N"

4. PWS begin date is later than processing date (adjusted for Lag)

5. PWS is "non-community" and the regulation has been in effect less than 2 years.

Appendix C.1

Build internal compliance tables:

Since Turbidity regulations are not subject to variances and exemptions, processing is greatly simiplified. Most regulation values are used directly from the internally stored regulation tables. Only the following determinations are required (determined separately for Federal and State regulations):

- determine sampling frequency based on PWS type:
  - for "community" PWS,
    Sampling frequency = REP-TURB-COM-SAMPLE-FREQ
  - for "non-community" PWS,
    Sampling frequency = REP-TURB-NCOM-SAMPLE-FREQ
- Since this frequency is expressed in hours/sample (24 = 1/day), compute the number of samples required per day and for the entire compliance period as follows:
  - Samples per day = (24/Sampling frequency)
  - Samples per CPD = Samples per day * CPD length (where CPD length = CPD end - CPD start + 1)

Appendix D.1

Processing of PWS's not scheduled for compliance edits:

PWS's whose compliance cycle does not match that requested in the processing options are not edited for compliance, however they are checked to determine if processing was skipped for a previous compliance period as follows:

- determine CPD dates for the compliance cycle requested on the processing options (CC-CPD, see appendix A.1).
- read the Compliance Status File (CSF) until a record is found with matching PWS-ID and contaminant ID of "Turbidity".
- if no CSF record was found, create one with

  CSF-SDF-RSPD-END = PWF-PLANT-BEGIN-DATE
- determine the most recent processable CPD dates for this PWS (PWS-CPD, see appendix A.1).
- compare PWS-CPD end date with CSF-SDF-RSPD-END from the CSF and with the CC-CPD end date
- if CSF-SDF-RSPD-END < PWS-CPD end date < CC-CPD end date, a compliance period was skipped for this PWS, and an appropriate message is written to the Warnings Report.

In addition, if any samples are found on the PSF with sample date older than the beginning of the PWS-CPD, they are too old to process for compliance, and they are transferred to the SAF with an appropriate warning message.

Appendix E.1

Edit for Compliance

- read the Compliance Status File until a record with matching PWS-ID and contaminant ID of "Turbidity" is found
- if no CSF record is found, create one with

  CSF-SDF-RSPD-END = PWF-PLANT-BEGIN-DATE
- determine the most recent processable compliance period dates for this PWS (PWS-CPD, see appendix A.1).
- compare PWS-CPD end date with CSF-SDF-RSPD-END
- if the dates are equal, the PWS has already been edited for compliance for this CPD, and an appropriate message is written to the Warning Report. Processing is bypassed for this PWS and the PSF samples for the PWS are copied to the remaining PSF for later use. This is accomplished by setting a PWS-NO-PROC switch.
- position the SAF for the insertion of new summary records generated during the compliance edit by copying records from the input SAF to the new SAF until a record is found with PWS ID greater than the one being edited or with the same PWS ID but for a contaminant ID greater than "Turbidity" (0100).
- initialize counters and computational items for the following:

  Analysis result data: Maximum AR

  Minimum AR

AR Total (used to compute Mean AR)

Sample counters: Regular summary samples

Regular detail samples

Check samples

Violation counters: (2 sets; one Federal and one State)

Consecutive MCL violations

Monthly average MCL violations

Regular sampling violations

Check sampling violations

Since at least one Turbidity sample must be taken per day, initialize a table of daily sample counters, one for each day of the compliance period.

- process all samples from the PSP with matching PWS-ID and contaminant ID of "Turbidity" according to the following logic.

Select PSF Samples for processing:

(1) Read PSF record. If there are no more PSF records for the PWS, exit to (5) to process violations for this PWS.

(2) Examine sample type and date:

- if sample type is anything except "C" or "D", or if sample date is before compliance period (CPD) start, copy sample to new SAP. If sample date is before CPD start, write a warning message on the Warning Report.
- If sample date is later than CPD end date, copy sample to remaining PSF for use next time.
- at this point, sample is type "C" or "D" and within the CPD.

The following selection process is performed twice, once for Federal and once for State values of "repeat" flag -- note that this may result in different samples being selected for Federal and State processing

- examine sample type:
- sample type = "D"
  - examine "repeat" flag:
  - repeat flag off
    - normal case, process input "D" sample as per (A)
    - return to (1) to get next sample
  - repeat flag on
    - unmatched regular "D" sample in hold area (that is, we were waiting for a "repeat" sample but didn't get it)

. process "D" sample from hold area as per (A)

. process "D" sample (input) as per (A)

. return to (1) to get next sample

. sample type = "C"

. examine "repeat" flag

. "repeat" flag off

. not expecting repeat sample -- either no regular sample was received with non-blank SIC or a repeat sample has already been processed, and this one is an extra

. repeat sample is ignored

. return to (1) to get next sample

. "repeat flag on

. repeat sample was expected -- regular "D" sample was saved in hold area

. turn off "repeat" flag

. compare "C" sample SIC with SIC of "D" sample in hold area

. SIC's do not match

. repeat sample is not related to the "D" sample in the hold area

. repeat sample is ignored

. process "D" sample from hold area as per (A)

. return to (1) to get next sample

. SIC's match

- repeat sample for "D" sample in hold area
- compare time of "C" and "D" samples:
- repeat sample not taken within maximum repeat sampling period
    - repeat sample does not replace regular sample
    - process "D" sample from hold area as per (A)
    - return to (1) to get next sample
- repeat sample was taken within maximum repeat sampling period
    - repeat sample replaces regular sample
    - process "C" sample as per (A)
    - return to (1) to get next sample

(A) Process selected PSP sample:

. At this point either the regular or repeat sample has been selected for processing -- not necessarily the same one for Federal and State. For this reason, separate counts and analysis result data are kept for Federal and State. The following processing uses the appropriate set of data, according to wiether the Federal or State regulations were used in selecting the sample in the previous section.

. examine record type:

. record type = summary

  . modify "monthly" information:

  . add 1 to internal summary record counter

  . add number of samples taken to internal detail sample counter

  . add (number of samples * average analysis result [AR]) to internal total

  . if AR max (sample) is greater than previous AR max (internal), set AR max (internal) to AR max (sample)

  . if AR min (sample) is less than AR min (internal), set AR min (internal) to AR min (sample)

  . add number of check samples taken to internal check sample counter

. if summary information indicates that insufficient check samples were taken, increment internal check sample violation counter

. record type = detail

. if sample type is "D" and analysis result (AR) is greater than the monthly MCL and the SIC is not blank, save this sample in hold area and set switch to indicate that a "repeat" sample is expected. The sample is not processed at this time, since it must be determined whether a "repeat" sample has been taken to confirm the possible MCL violation. Go back to step (1) of the PSF sample selection logic to look for the "repeat" sample.

. if sample type is "C" (repeat sample) or if the AR is less than the monthly MCL or if the SIC is equal to blank, the sample will be processed at this time (note that if the sample is type "D" and the AR exceeds the monthly MCL, but the SIC is blank, this sample must be used, because without the SIC, no "repeat" sample can be associated with the regular sample).

. modify "monthly" information:

. add 1 to internal detail sample counter

. add analysis result (AR) to internal AR total

. if AR (sample) is greater than internal AR max, set internal AR max to AR (sample)

- if AR (sample) is less than internal AR min, set internal AR min to AR (sample)
- modify "daily" information:
- add 1 to daily sample counter for appropriate day
- if AR (sample) is greater than internal AR max for this day, set internal daily AR max to AR (sample)

- return to (1) in PSP sample selection process to get next sample

Determine Violations:

After the PSF samples for a PWS have been processed as above, the internally accumulated data are examined to determine MCL and sampling violations. Each of the following sections is performed twice, once using Federal regulations and once using State regulations.

Determine_regular_sampling_violations:

- the regulations state that a certain number of samples must be taken each day, however if the PWS summarizes their samples, there is no way to determine if this requirement is being met, therefore:
  - if summary records were input, check to see if enough samples were taken for the entire compliance period (assume that daily sampling requirement has been met):
    - if Total samples is less than Samples per CPD, increment regular sampling violation counter
  - if no summary records were input, compare the sample count for each day of the compliance period with the required value from the regulations:
    - if # samples for this day is less than Samples per day, increment regular sampling violation counter

- if regular sampling violation counter is non-zero, assign a regular sampling violation

Determine_check_sampling_violations:

Check sampling violations are determined during the PSF sample selection and processing by incrementing a check sampling violation counter whenever a "repeat" sample is expected and decrementing the counter when the expected "repeat" sample is received.

- if check sample violation counter is non-zero, assign a check sampling violation.

Determine_Consecutive_Sample_MCL_Violations:

There is no "single sample" MCL violation for Turbidity; instead, sample results are analyzed for "consecutive sample" MCL violations by computing an analysis result (AR) average for samples collected on a specified number of consecutive days during the compliance period:

$$\text{Consec sum (d)} = \sum_{x=d-n+1}^{d} \text{AR total (x)}$$

$$\text{Consec samples (d)} = \sum_{x=d-n+1}^{d} \text{Sample counter (x)}$$

where n = number of consecutive days specified in regs. Consec average (d) = Consec sum (d) / Consec samples (d)

Consec average (d) is examined for $n \leq d \leq$ end of CPD:

- if Consec average (d) is greater than Consec MCL, increment consec MCL violation counter
- if Consec MCL violation counter is non-zero, assign Consecutive MCL violation

Determine Monthly Average MCL violation:

- compute the AR average for all samples submitted during the CPD:

$$\text{Monthly average} = \sum_{d=1}^{\text{CPD length}} \text{AR (d)} \quad / \quad \sum_{d=1}^{\text{CPD length}} \text{samples (d)}$$

where: AR (d) is the sum of all analysis results for all samples submitted for day (d)

- if Monthly average is greater than Monthly MCL, assign a monthly average MCL violation.

Appendix F.1 Building of the Violation Records

1. The following fields are utilized in building the VIF-M-REPT-RECORD along with their sources

From the Internally stored Public Water File Record

VIF-M-PWS-ID

VIF-M-PWS-NAME

VIF-M-PWS-TYPE

VIF-M-POPULATION

VIF-M-SOURCE-CODE

VIF-M-REGION

VIF-M-DISTRICT

From the Internal Compliance Tables

VIF-M-MCL-VIOLATED

VIF-M-MCL-VIOL-DECIMALS

Internally Generated	Lab Table
VIF-M-REGULATION-LEVEL	VIF-M-LAB-NAME
VIF-M-VIOLATION-TYPE	
VIF-M-VIOLATION-DATE	
VIF-M-LAB-ID	
VIF-M-SAMPLE-DATE	
VIF-M-ANALYSIS-METHOD	
VIF-M-ANALYSIS-RESULT	
VIF-M-ANALYSIS-DECIMALS	

VIP-M-ANALYSIS-DATE

VIP-M-SAMPLE-TYPE

VIP-M-CONTAMINANT-ID

2. The following fields are utilized on building the VIP-S-REPT-RECORDS along with their sources.

From the internally stored Public Water File Record

VIP-S-PWS-ID

VIP-S-PWS-NAME

VIP-S-PWS-TYPE

VIP-S-PWS-POPULATION

VIP-S-PWS-SOURCE-CODE

VIP-S-REGION

VIP-S-DISTRICT

From the Internal Compliance Table

VIP-S-SAMPLES-NUM-REQUIRED

Internally Generated

VIP-S-REGULATION-LEVEL

VIP-S-VIOLATION-TYPE

VIP-S-VIOLATION-DATE

VIP-S-VIOLATION-DURATION

VIP-S-SAMPLES-NUM-TAKEN

VIP-S-SAMPLES-CUTOFF-DATE

VIP-S-CONTAMINANT-ID

3. The following fields are used in building the VIF Update Transaction File.

For VIF-TR00-UPDT-RECORD

VIF-TR00-VIOLATION-ID = blanks

VIF-TR00-TRANSACTION-CODE = "00"

VIF-TR00-CREATE-DELETE-FLAG = "Y"

For VIF-TR01-UPDT-RECORD

Use corresponding fields from VIF-M-REPT-RECORD for MCL violations or VIF-S-REPT-RECORD for sampling violations

and VIF-TR01-VIOLATION-ID = blanks

VIF-TR01-TRANSACTION CODE = "01"

For VIF-TR02-UPDT-RECORD

Use corresponding fields from VIF-M-REPT-RECORD for MCL Violations or VIF-S-REPT-RECORD for sampling violations and VIF-TR02-VIOLATION-ID = blanks

VIF-TR02-TRANSACTION-CODE = "02"

COMPLIANCE OVERVIEW

- The sections of the compliance program are executed in the following sequence:

  - BUILD INTERNAL REGULATIONS TABLES
  - PROCESS PWF
  - PROCESS CONTAMINANT LIST
  - PROCESS CSF
  - PROCESS SAF
  - PROCESS PSF
  - MERGE SAF-PSF ARRAYS
  - DETERMINE SSC's
  - PROCESS VIOLATIONS
  - PROCESS SAMPLE GROUP BREAK

- The following material gives general information on these section and references the more detail information by enclosing the name of the detail logic sections thus:

  ```
  ----------
  * XXXXXXXX
  ----------
  ```

  In this manner, a broad overview of the compliance logic can be gained by viewing these few sections, while the details of the record storage and violation processing are available in the detail sections.

BUILD INTERNAL REGULATIONS TABLES (IRT's):

- READ RGF (Regulations File)
- Check if RGF endfile:
  - RGF-EOF - on:
    - IRT's are now loaded
    - Exit to 'PROCESS PWF'
  - RGF-EOF - off:
    - Store the Regulations record in the Internal Regulations Table based on the Reg-Level (Federal or State) and the Contaminant Group (Cont-Grp) - the first digit of the Contaminant-Id (Cont-Id). For Organic Chemicals, the Cont-Grp is '2'
    - Check the Cont-Grp code of the RGF record:
      - Cont-Grp of RGF = '2':
        - Store in IRT based on Fed or State code
        - Return to 'READ RGF'
      - Cont-Grp ≠ '2':
        - Do not store the record
        - Return to 'READ RGF'

PROCESS PWF:

- Check for PWF endfile:
- PWF-EOF - on:
  - exit to 'PROCESS CSF'
- PWF-EOF - off:
  - Check if the PWF is "excluded":
  - PWS is "excluded:
    - Turn on PWS-EXCL switch
    - exit to 'PROCESS SAF'
  - PWS not "excluded":
    - Set CONT-CTR = 0
    - Turn off PWS-EXCL switch
    - Exit to 'PROCESS CONTAMINANT LIST'

PROCESS CONTAMINANT LIST:

- Add 1 to CONT-CTR
- Check if CONT-CTR grtr than the number of Contaminant List entries
  - CONT-CTR grtr than # Contaminant List entries:
    - Move old Contaminant Group to first position of Stored Cont-ID
    - Move '9's to remaining three positions of Stored Cont-Id
  - CONT-CTR = to or less than # Contaminant List entries:
    - Move Contaminant List entry (CONT-CTR) to Stored Cont-Id
- Exit to 'PROCESS CSF'

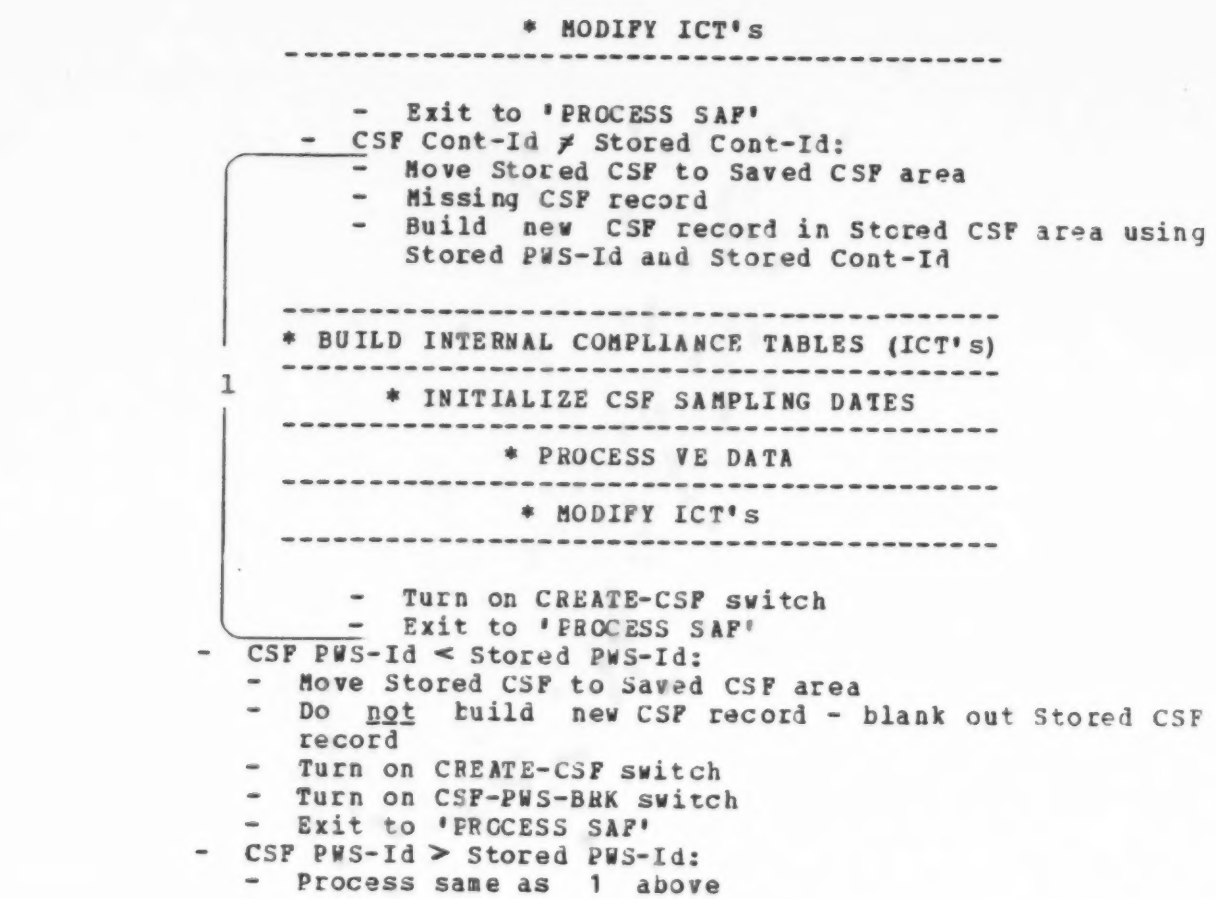
PROCESS CSF:

- Check for CSF endfile -
- CSF-EOF - on:
  - Check for PWF endfile:
  - PWF-EOF - on:
    - Exit to 'PROCESS SAF'
  - PWF-EOF - off:
    - Check if PWS is excluded:
    - PWS is "excluded":
      - Do not build new CSF record
      - Exit to 'PROCESS SAF'
    - PWS is not "excluded":
      - Cont-Id on Cont-List for which there is no CSF record
      - Build new CSF record in Stored CSF area using the Stored PWS-Id and the Stored Cont-Id

---
* BUILD INTERNAL COMPLIANCE TABLES (ICT's)
---
* INITIALIZE CSF SAMPLING DATES
---
* PROCESS VE DATA
---
* MODIFY ICT's

  - Exit to 'PROCESS SAF'
- CSF-EOF - off:
  - Store CSF record
  - Check CSF PWS-Id against Stored PWS-Id:
  - CSF PWS-Id = Stored PWS-Id:
    - Check if PWS is "excluded":
    - PWS is "excluded":
      - Exit to 'PROCESS SAF'
    - PWS is not 'excluded":
      - Check CSF Cont-Grp against first position of Stored Cont-Id:
      - CSF Cont-Grp < Stored Cont-Id Cont-Grp:
        - Copy Stored CSF record to new CSF
        - READ CSF
        - Return to 'PROCESS CSF'
      - CSF Cont-Grp > Stored Cont-Id Cont-Grp:
        - Process same as 1 below
      - CSF Cont-Grp = Stored Cont-Id Cont-Grp:
        - Check CSF Cont-Id against Stored Cont-Id:
        - CSF Cont-Id = Stored Cont-Id:

---
* BUILD INTERNAL COMPLIANCE TABLES (ICT's)
* INITIALIZE CSF SAMPLING DATES
---
* PROCESS VE DATA


* MODIFY ICT's
- Exit to 'PROCESS SAF'
- CSF Cont-Id ≠ Stored Cont-Id:
- Move Stored CSF to Saved CSF area
- Missing CSF record
- Build new CSF record in Stored CSF area using Stored PWS-Id and Stored Cont-Id
* BUILD INTERNAL COMPLIANCE TABLES (ICT's)
1
* INITIALIZE CSF SAMPLING DATES
* PROCESS VE DATA
* MODIFY ICT's
- Turn on CREATE-CSF switch
- Exit to 'PROCESS SAF'
- CSF PWS-Id < Stored PWS-Id:
- Move Stored CSF to Saved CSF area
- Do not build new CSF record - blank out Stored CSF record
- Turn on CREATE-CSF switch
- Turn on CSF-PWS-BRK switch
- Exit to 'PROCESS SAF'
- CSF PWS-Id > Stored PWS-Id:
- Process same as 1 above

PROCESS SAF:

- Initialize SAF Stored Sample Date to 'high values'
- Check for SAF endfile:
- SAF-EOF - on:
  - Count the number of records stored in SAF-SDA (SAF-Sample Data Array)
  - If the number is grtr than zero, turn on SAF-SDA switch
  - Else, turn off SAF-SDA switch
  - Exit to 'PROCESS PSF'
- SAF-EOF - off:
  - Check for PWF endfile:
  - PWF-EOF - on:
    - Copy SAF sample to new SAF
    - Produce error message for "SAF sample record PWS-Id not on PWF" in the Warnings Report
    - READ SAF
    - Return to 'PROCESS SAF'
  - PWF-EOF - off:
    - Check SAF PWS-Id against Stored PWS-Id:
    - SAF PWS-Id = Stored PWS-Id:
      - Check if PWS is "excluded";
      - PWS-EXCL switch - on:
        - PWS is "excluded" from sampling
        - Copy SAF sample to new SAF
        - Do <u>not</u> assign new SAF Sample Key
        - READ SAF
        - Return to 'PROCESS SAF'
      - PWS-EXCL switch - off:
        - PWS is not "excluded" from sampling
        - Check the SAF Cont-Id against Stored Cont-Id:
        - SAF Cont-Id = Stored Cont-Id:

          ---

          * STORE SAF RECORD

          - READ SAF
          - Return to 'PROCESS SAF'
        - SAF Cont-Id less than Stored Cont-Id:
          - Cont-Id not on Cont-List
          - Produce error message "SAF sample record Cont-Id not on Contaminant List" in the Warnings Report
          - Copy SAF record to new SAF
          - Do <u>not</u> assign new SAF Sample Key
          - READ SAF
          - Return to 'PROCESS SAF'
        - SAF Cont-Id grtr than Stored Cont-Id:
          - Count the number of records stored in SAF-SDA
          - If the number is grtr than zero, turn on SAF-SDA switch
          - Else, turn off SAF-SDA switch
          - Exit to 'PROCESS PSF'
    - SAF PWS-Id less than Stored PWS-Id:
      - PWS on file not on PWF

- Produce error message "SAF sample record PWS-Id not on PWF" in the Warnings Report
- Copy SAF record to new SAF
- Do not assign new SAF Sample Key
- READ SAF
- Return to 'PROCESS SAF'

- SAF PWS-Id grtr than Stored PWS-Id:
  - Count the number of records stcred in SAF-SDA
  - If the number is grtr than zero, turn on SAF-SDA switch
  - Else, turn off SAF-SDA switch
  - Turn on SAF-PWS-BRK switch
  - Exit to 'PROCESS PSF'

PROCESS PSF:

- Check for PSF endfile:
- PSF-EOF - on:
  - Count the number of records stored in PSF-SDA (PSF-Sample Data Array)
  - If the number is grtr than zero, turn on PSF-SDA switch
  - Else, turn off PSF-SDA switch
  - Exit to 'MERGE SAF/PSF ARRAYS'
- PSF-EOF - off:
  - Check for PWF endfile:
  - PWF-EOF - on:
    - Assign new SAF Sample Key (date only)
    - Set SSC to 44
    - Copy PSF sample record to new SAF
    - Produce error message "PSF sample record PWS-Id not on PWF" in the Warnings Report
    - READ PSF
    - Return to 'PROCESS PSF'
  - PWF-EOF - off:
    - Check PSF PWS-Id against Stored PWS-Id:
    - PSF PWS-Id = Stored PWS-Id:
      - Check if PWS is "excluded":
      - PWS-EXCL switch - on:
        - PWS is "excluded: from sampling
        - Assign new SAF Sample Key (date only)
        - Set SSC to 99
        - Copy PSF sample to new SAF
        - READ PSF
        - Return to 'PROCESS PSF'
      - PWS-EXCL switch - off:
        - Check the PSF Cont-Id against Stored Cont-Id:
        - PSF Cont-Id = Stored Cont-Id:

          ---

          * STORE PSF RECORD

        - READ PSF
        - Return to 'PROCESS PSF'
      - PSF Cont-Id less than Stored Cont-Id:
        - Cont-Id not on Cont-List
        - Produce error message "PSF sample record Cont-Id not on Contaminant List" in the Warnings Report
        - Assign new SAF Sample Key (date only)
        - Set SSC to 44
        - Copy PSF record to new SAF
        - READ PSF
        - Return to 'PROCESS PSF'
      - PSF Cont-Id grtr than Stored Cont-Id:
        - Count the number of records stored in PSF-SDA
        - If the number is grtr than zero, turn on PSF-SDA switch
        - Else, turn off PSF-SDA switch
        - Exit to 'MERGE SAF?PSF ARRAYS'
    - PSF PWS-Id less than Stored PWS-Id:

- PWS on file not on PWP
- Produce error message "PSP smaple record PWS-Id not on PWP" in the Warnings Report
- Assign new SAF Sample Key (date only)
- Set SSC to 44
- Copy PSP sample to new SAF
- READ PSP
- Return to 'PROCESS PSP'

PSP PWS-Id grtr than Stored PWS-Id:

- Count the number of records stored in PSP-SDA
- If the number is grtr than zero, turn on PSP-SDA switch
- Else, turn off PSP-SDA switch
- Turn on PSP-PWS-BRK switch
- Exit to 'MERGE SAF-PSP ARRAYS'

MERGE SAF/PSF ARRAYS:

- Processing depends on the settings of the SAF-SDA and PSF-SDA switches:
- If both the SAF-SDA & PSF-SDA switches are off, Exit to 'PROCESS VIOLATIONS'
- If either or both are on, process the Arrays:

---

* MERGE SAF-PSF ARRAYS

- Exit to 'DETERMINE SSC's'

DETERMINE SSC's:

- In this section, the Stored Sample Codes (SSC's) are determined for all the new records from the PSF to assist in Violation Processing in later sections.
- For the detail logic see:

---

* DETERMINE SSC's

- Exit to 'PROCESS VIOLATIONS'

PROCESS VIOLATIONS:

- The Violations processing is done in several sections in the order of MCL violations first, followed by Sampling violaitons.
- For those PWS that are "excluded" the violations sections are skipped.
- For the detail logic, see the following sections:

---

* PROCESS VIOLATIONS - MCL:
- PROCESS FED & STATE MCL VIOLATIONS
- PROCESS FED CHECK SAMPLES
- PROCESS STATE MCL VIOLATIONS
- PROCESS STATE CHECK SAMPLES

---

* PROCESS VIOLATIONS - SAMPLING:
- PROCESS FEDERAL REGULAR SAMPLING VIOLATIONS
- PROCESS FEDERAL CHECK SAMPLING VIOLATIONS
- PROCESS STATE REGULAR SAMPLING VIOLATIONS

- When done, exit to 'PROCESS SAMPLE GROUP BREAK'

PROCESS SAMPLE GROUP BREAK:

- Check for PWF endfile:
- PWF-EOF - on:
  - Exit to the end of the program and terminate the run
- PWF-EOF - off:
  - Process the CPA:
    - Copy those CPA records flagged as such to the new SAF
    - Copy the remaining CPA records to the new PSF

- Copy the Stored CSF record to the new CSF
- Check the CREATE-CSF switch:
  - CREATE-CSF switch - off:
    - READ CSF
  - CREATE-CSF switch - on:
    - Copy the Saved CSF record to the Stored CSF record
    - Turn off the CREATE-CSF switch

- Check the CSF-PWS-BRK, SAF-PWS-BRK, and PSF-PWS-BRK switches:
  - All three (3) switches are - on:
    - Set all three switches - off
    - READ PWF
    - Return to 'PROCESS PWF'
  - Any of the three switches - off:
    - Return to 'PROCESS CONTAMINANT LIST'

A.1 - READ PWF:

a. - The PWF is the master file for processing all the PWS's
b. - Determine if the PWS is "excluded" from compliance processing, due to one of the following:
  (I) - Non-comunity PWS
  (II) - Inactive PWS
  (III) - Consecutive PWS
  (IV) - Regulated by neither Federal or State regulations
  (V) - PWS not monitoring ground water & State not monitoring ground water
  (VI) - PWS begin date grtr than current date
c. - If the PWS meets any of the above criteria, turn on the PWS-EXCL-sw and exit to READ SAF RECORD
d. - If the PWS does not meet any of the above criteria:
  (I) - Store the PWF record - for later use in modifying the Internal Compliance Tables
  (II) - The entire remaining portion of the Compliance Logic is performed for each Contaminant-Id in turn, for each of the PWS's in turn.
  (III) - The State Contaminant List, built from the State Regulations, is used as the master Contaminant List for processing the PWS's. Each Contaminant-Id (Cont-Id) in turn is selected from the List and stored to become the "Stored Cont-Id" used in the remainder of the Compliance Logic.
  (IV) - For Inorganic Chemicals only - The Air Temperature fields from the PWF are edited against the Federal & State Regulations to be sure that it is within the "reasonable bounds" established by the regulations. If not, appropriate messages are produced on the Warnings Report.

- BUILD INTERNAL COMPLIANCE TABLES (ICT):

  - FEDERAL:
    - Copy the following values from the Federal Internal Regulations Table (IRT) to the Federal Internal Compliance Table (ICT):
      - MCL
        Regular Sampling Period - Rglr Splg Prd
      - Initial Check Sampling Period - (ICSP)
      - Followup Check Sampling Period - (CSPD)
      - Minimum Required Number of Negative Check Samples - Reqd-Num-Neg-Chr-Spls
      - Minimum Required Number of Additional Analyses - Reqd-Num-Addl-Anlys
      - Effective Date
  - STATE:
    - Copy the same values from the State IRT to the State ICT:
      - MCL
      - Rglr Splg Prd
      - ICSP
      - CSPD
      - Reqd-Num-Neg-Chk-Spls
      - Reqd-Num-Addl-Anlys
      - Effective Date

Note: Whenever the values in these fields are referenced in the logic, these fields are called "Check Fields" to indicate that they are the Regulation values. Those MCL and Rglr Splg Prd values changed by V&E are to be found in the Fed MCL VE ARRAY, State MCL VE ARRAY, Fed SPLG VE ARRAY, and State SPLG VE ARRAY - all of which are loaded in a later section of the logic.

- INITIALIZE CSF SAMPLING DATES:

  - FEDERAL:
    - Check if the Fed RSPD's are bland -
    - Fed RSPD's = ß:
      - Check if record in Fed SPLG VE ARRAY:
        - Record in Fed SPLG VE ARRAY:
          - Use the Start Date from the Fed SPLG VE ARRAY record, giving the Fed RSPD Start Date
          - Add the length from the Fed SPLG VE ARRAY record minus 1 to the Start Date from the Fed SPLG VE ARRAY record, giving the Fed RSPD End Date
        - No record in Fed SPLG VE ARRAY:
          - Use the Effective Date Check Field of the Red Regs, giving the Fed RSPD Start Date
          - Add the Fed Rglr-Splg-Prd Check Field length to the Fed Effective Date Check Field minus 1, giving the Fed RSPD End Date
      - Copy the Fed RSPD's to the Stored CSF record

    Fed RSPD's = non-ß:
      - No action taken here

  - STATE:
    - Check if the State RSPD's are blank -
    - State RSPD's = ß:
      - Check if record in State SPLG VE ARRAY:
        - Record in State SPLG VE ARRAY:
          - Use the Start DAte from the State SPLG VE ARRAY record, giving the State RSPD Start Date
          - Add the length from the State SPLG VE ARRAY record minus 1 to the Start Date from the State SPLG VE ARRAY record, giving the State RSPD End Date
        - No record in State SPLG VE ARRAY:
          - Use the Effective Date Check Field of the State Regs, giving the State RSPD Start Date
          - Add the State Rglr-Splg-Prd Check Field length to the State Effective Date Check Field minus 1, giving the State RSPD End Date

      Copy the State RSPD's to the Stored CSF record
    - State RSPD's = non-ß:
      - No action taken here

- PROCESS VE DATA:

  - STORE PWF VE DATA:
    - Check the PWF V&E Date fields:
    - All the PWF V&E Data field = ø:
      - Turn off PWF-VE-DATA switch
      - Exit to 'PROCESS CSF VE DATA'
    - One or more of the PWF VE data fields for the Stored Cont-Id are non-ø:
      - Turn on the PWF-VE-DATA switch
      - Move data from the non-ø PWF Data fields for the Stored Cont-Id to the PWF VE ARRAY
      - Exit to 'PROCESS CSF VE DATA'
  - PROCESS CSF VE DATA:
    - Check the CSF VE Data fields:
    - All the CSF VE Data fields = ø:
      - Turn off the CSF-VE-DATA switch
      - Exit to 'PROCESS PWF VE DATA'
    - Any of the CSF VE Data fields are non-ø:
      - Store the data from the non-ø CSF VE Data fields in the CSF VE ARRAY
      - Exit to 'PROCESS CSF VE ARRAY'
  - PROCESS CSF VE ARRAY:
    - Process for each record in the CSF VE ARRAY:
    - Check the End Date of the record -
    - End Date of the CSF VE ARRAY record = ø:
      - V & E may still be in effect
      - Check the PWF-VE-DATA switch:
      - PWF-VE-DATA switch - off:
        - V & E no longer in effect
        - Enter current date as End Date into the CSF VE ARRAY record
        - Return to 'PROCESS CSF VE ARRAY'
      - PWF-VE-DATA switch - on:
        - Check the PWF VE ARRAY for a match on MCL (MOD-MCL) and Sampling Period (ALT-SPLG):
        - No match on MOD-MCL & ALT-SPLG in PWF VE ARRAY:
          - Process same as 1 above
          - Return to 'PROCESS CSF VE ARRAY'
        - Match on MOD-MDL & ALT-SPLG in PWF VE ARRAY:
          - V & E is still in effect
          - Flag PWF VE ARRAY record as "processed" - turn on 'PWF-PROC' flag
          - Return to 'PROCESS CSF VE ARRAY'
    - End Date of the CSF VE ARRAY record = non-ø:
      - Process same as 1 above
      - Return to 'PROCESS CSF VE ARRAY'
  - PROCESS PWF VE DATA:
    - Check the PWF-VE-DATA switch -
    - PWF-VE-DATA switch - off:
      - No PWF VE Data for this Cont-Id
      - Exit to 'RESTORE CSF VE DATA'
    - PWF-VE-DATA switch - on:
      - Process PWF VE ARRAY:
        - Check 'PWF-PROC' flag in PWF VE ARRAY record -

        - 'PWF-PROC' flag - on:
            - PWF VE ARRAY record already processed
            - Return to 'PROCESS PWF VE ARRAY'
        - 'PWF-PROC' flag - off:
            - Turn on CSF-VE-DATA switch
            - Copy PWF VE ARRAY data to CSF VE ARRAY
            - Enter current date as Start Date in CSF VE ARRAY record
            - Return to 'PROCESS PWF VE ARRAY'
- RESTORE CSF VE DATA:
    - Check the CSF-VE-DATA switch -
    - CSF-VE-DATA switch - off:
        - No V&E Data to process
        - Exit to '
    - CSF-VE-DATA switch - on:
        - Copy the last four (4) CSF VE ARRAY records to the CSF VE Data fields in the CSF record
        - Exit to '

- MODIFY INTERNAL COMPLIANCE TABLES (ICT):

  - Check the CSF-VE-DATA switch -
  - CSF-VE-DATA switch - off:
    - No V & E Data to process
    - Exit to '
  - CSF-VE-DATA switch - on:
    - Process for each set of CSF VE Data:
      - Check the MOD-MCL field against the Fed MCL Check Field
      - MOD-MCL field qrtr than or = to Fed MCL Check Field:
        - MCL V&E for Fed & State
        - Copy MOD-MCL value and Dates from the CSF VE ARRAY record to the FED MCL VE ARRAY and the STATE MCL VE ARRAY
        - Check the ALT-SPLG field of the CSF VE ARRAY record
        - ALT-SPLG field = ∅:
          - No further action taken
          - Return to 'Process for each set of CSF VE Data'
        - ALT-SPLG field = non-∅:
          - MCL and SPLG V&E for Fed & State
          - Copy ALT-SPLG value and Dates from the CSF VE ARRAY record to the FED SPLG VE ARRAY and the STATE SPLG VE ARRAY
          - Return to 'Process for each set of CSF VE Data'
      - MOD-MCL field less then Fed MCL Check Field:
        - MCL V&E for State only
        - Copy MOD-MCL value and Dates from the CSF VE ARRAY record to the STATE MCL VE ARRAY only
        - Check the ALT-SPLG field of the CSF VE ARRAY record
        - ALT-SPLG field = ∅:
          - No further action
          - Return to 'Process for each set of CSF VE Date'
        - ALT-SPLG field = non-∅:
          - MCL and SPLG V&E for State only
          - Copy ALT-SPLG value and Dates from the CSF VE ARRAY record to the STATE SPLG VE ARRAY
          - Return to 'Process for each set of CSF VE Data'

STORE SAF RECORD:

- The SAF records are stored by sample groups - samples with the same Contaminant-Id and PWS-Id as the Stored Id's and with the same Sample Id Codes (SIC's) and Analysis Method Codes (AM's).
- Check Fed SPLG VE ARRAY for record with 'zeroes' in the ALT-SPLG field
- Record found in Fed SPLG VE ARRAY with 'zeroes' in the ALT-SPLG field:
  - This Contaminant is under a sampling exemption and no samples are required
  - Copy the SAF record to the new SAF
  - Do not assign a new SAF Sample Key - the old one is retained
  - EXIT
- No record found with 'zeroes' in ALT-SPLG field in Fed SPLG VE ARRAY:
  - Process the SAF record based on Sample Type & UFC codes:
  - Sample Type = "S", "R", or "P":
    - Special Sample
    - Copy the SAF record to the new SAF
    - Do not assign a new SAF Sample Key - the old one is retained
    - EXIT
  - Sample Type = "D" or 'C':
    - Regular sample = "D"
    - Addl Anlys or Check sample = "C"
    - Check the Stored Sample Code (SSC's) to determine if the sample is not needed:
    - SAF record SSC = 44, 55, or 99
      - SAF record is not needed for compliance processing
      - Copy the SAF record to the new SAF
      - Do not assign a new SAF Sample Key - the old one is retained
    - EXIT

    - SAF record SSC - not one of the above:
      - Check the 'Regulated-By' field in the Stored PWF record to determine if the PWS is "State-only":
      - PWS is "State-only":
        - Check only the State UFC in the SAF record:
        - State UFC = "R".
          1 - SAF record already fully processed for compliance
          - Copy the SAF record to the new SAF
          - Do not assign a new SAF Sample Key - the old one is retained
          - EXIT
        - State UFC = "M", "R", or 's':
          2 - SAF record may still be needed for compliance processing
          - Store the SAF record in the SAF Stored Data Array - SAF-SDA
          - Store the Sample Date of the SAF record
          - EXIT

- PWS is not "State-only":
  - Check both the Fed & State UFC's:
  - Both Fed & State UFC's = "B":
    - Process the same as 1 (pg. 841)
    - EXIT
  - Either the Fed or State UFC = "M", "R", or "S":
    - Process the same as 2 (pg. 841)
    - EXIT

STORE PSF RECORD:

- The PSF records are stored by sample groups - samples with the same Contaminant-Id and PWS-Id as the Stored Id's and with the smae Sample Id Codes (SIC's) and Analysis Method Codes (AM's).
- Check Fed SPLG VE ARRAY for record with 'zeroes' in the ALT-SPLG field
- Record found in Fed SPLG VE ARRAY with 'zeroes' in ALT-SPLG field:
  - This Contaminant is under a sampling exemption and no samples are required

- Set the Fed & State UFC's to "B"
  - Set the SSC to 55
  - Assign new SAF Sample Key (date only)
  - Copy the PSF sample to the new SAF
  - EXIT
- No record found with 'zeroes' in ALT-SPLG field in Fed SPLG VE ARRAY:
  - Process the PSF record based on Sample Type and Sample Date:
  - Sample Type = "S", "R", or "P":
    - Special Sample
    - Set SSC to 44
    - Set Fed & State UFC's to "B"
    - Assign new SAF Sample Key (date only)
    - Copy PSF sample to the new SAF
    - EXIT
  - Sample Type = "D":
    - Regular Sample
    - Check if Seasonal Sampling applies:
    - Seasonal Sampling applies:
    - Check Sample Date against Seasonal Dates from the Stored PWF record:
    - Sample Date - not within Seasonal Dates: (Organic Chemicals only)
      - Set SSC to 44 - extrs sample
      - Assign Fed & State UFC's of "B"
      - Assign new SAF Sample Key (date only)
      - Copy PSF record to new SAF
      - EXIT
    - Sample Date - within Seasonal Dates; or Seasonal Sampling does not apply:
      - Check Sample Date against Stored Sample Date from the last SAF sample record:
      - PSF record Sample Date - less than SAF Stored Sample Date:
        - Sample too old to process
        - Produce message "PSF sample received dated xx/xx/xx - too old to process - copies to SAF as an extra sample" in the Warnings Report
      - Set the Fed & State UFC's to "B"
      - Set the SSC to 44
      - Assign new SAF Sample Key (date only)

- Copy PSF sample record to new SAF
- EXIT
- PSF record Sample Date - grtr than or = to SAF Stored Sample Date:
  - Store PSF sample in PSF Sample Data Array - PSF-SDA
  - EXIT

- Sample Type = "C":
  - Additional Analysis (Addl Anlys) or Check sample
  - Check Sample Date against Stored Sample Date from the last SAF sample record:
  - PSF record Sample Date - less than SAF Stored Sample Date:
    - Process the same as 1 above
    - EXIT
  - PSF record Sample Date - grtr than or = to SAF Stored Sample Date:
    - Store PSF sample in PSF-SDA
    - EXIT

III.B.3 - MERGE_SAF-PSF_ARRAYS:

- Check for Cont-Id = 'X999' if so PROCESS SAMPLE GROUP BREAK
- Determine which of the PSF SAMPLE DATA ARRAY or SAF SAMPLE DATA ARRAY have records in them
- Check PSF-SDA-sw and SAF-SDA-sw:

a. - PSF-SDA-sw and SAF-SDA-sw - both off:
   (I) - no records in either Array
   (II) - exit to PROCESS VIOLATIONS

b. - PSF-SDA_sw off; SAF-SDA-sw on:
   (I) - No records in the PSF-SDA
   (II) - Copy SAF-SDA records to the Current Processing Array (CPA)
   (III) - Exit to PROCESS VIOLATIONS

c. - PSF-DSA-sw on; SAF-SDA-sw off:
   (I) - No records in the SAF-SDA
   (II) - Copy the PSF_SDA records to the CPA
   (III) - Exit to DETERMINE SSC's

d. - PSF_SDA-sw and SAF-SDA-sw - both on:
   (I) - Records in both the PSF-SDA and the SAF-SDA
   (II) - Merge the PSF-SDA records and the SAF-SDA records into the CPA by Sample Date
   (III) - Exit to DETERMINE SSC's

III.B.4 - DETERMINE SSC's:

- The Stored Sample Code (SSC), one for Federal and one for State, in each SAP sample record, is set in this section based on the Sample Type, the Sample Date, whether or the Sample Id Code (SIC) is blank, and other samples or the "group" - the same SIC & Analysis Method (AM).

III.B.4.a - Determine if the PWS is "state-only":

(I) - The PWS is "State-only":
- exit to 'PROCESS STATE SSC's'

(II) - The PWS is not "State-only":
- Process both Federal & State SSC's below:

III.B.4.b - PROCESS FEDERAL & STATE SSC's:

III.B.4.b.(I) - Process Fed & State Regular Sample SSC's:
- CPA record Sample Type = "D" = Regular Sample
- Check the SSC of the CPA record -

(A)- SSC = 11:
(1)- Federal & State Regular Sample
(2)- Return to 'Process Fed & State Regular Sample SCC's'

(B)- SSC = ##:
(1)- CPA record is a new Fed & State Regular Sample
(2)- As a matter of compliance processing policy, those samples determined to be Regular Samples (SSC = 1) for Federal purposes, are also coded the same way for State purposes; thus, set SSC to 11
(3)- Return to 'Process Fed & State Regular Sample SSC's

III.B.4.b.(II) - Process Federal Check Samples SSC's:
- Process each "group" of check samples - those Additional Analysis (SSC = 2) or Check samples (SSC = 3) with the same Sample Id Code (SIC) and Analysis Method (AM) - in one pass of the logic, irrespective of Compliance Period dates.

III.B.4.b.(II).(A) - Process for each check sample "group":
- Determine if Rglr Spl (SSC = 1) with matching SIC & AM to "group" in Current Processing Array (CPA)

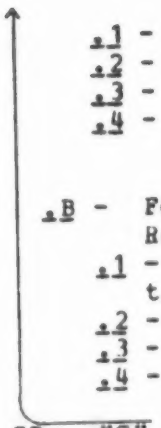
III.B.4.b.(II).(A).(1) - Rglr Spl with matching SIC & AM in CPA:

(a)- Determine the Initial Check Sampling Period (ICSP) - period during which the Additional Analyses (Addl Anlys) must be taken - based on the Sample Date of the Rglr Spl and the Fed ICSP Check Field:

(b)- Process all samples of the "group":
- Determine if the Sample Type "C" sample is with the Fed ICSP:

.I - "C" sample - within the Fed ICSP:
- Determine if enough Addl Anlys samples have already been taken by comparing the Fed-Addl-Spl-Ctr to Fed-Reqd-Num-Addl-Anlys-Check-Field:

1 .A - Fed-Addl-Spl-Ctr less than Fed-Reqd-Num-Addl-Anlys-Check-Field:



.1 - "C" sample is Fed Addl Anlys
.2 - Set SSC to 2x
.3 - Add to Fed-Addl-Spl-Ctr
.4 - Return to 'Process all samples of the "group"' and process the rest of the samples of the "group".

.B - Fed-Addl-Spl-Ctr qrtr than or = to Fed-Reqd-Num-Addl-Anlys-Check-Field:
.1 - Enough Fed Addl Anlys samples already taken to process the violation
.2 - "C" sample is a Fed Check Sample
.3 - Set SSC to 3x
.4 - Return to 'Process all samples of the "group"'

.II - "C" sample not within the Fed ICSP:
.A - "C" sample is a Fed Check Sample
.B - Set SSC to 3x
.C - Return to 'Process all samples of the "group"'

(C) - When all samples of the "group" have been processed, return to 'Process for each check sample "group" and process the next "group".

III.B.4.b.(II).(A).(2) - No Fed Rglr Spl with matching SIC & AM in CPA:
- Federal Regular Sample not received as all
- Check the Regular Sample Dates in the sample "group":

III.B.4.b.(II).(A).(2).(a) - All of the Regular Sample Dates are blank:
- No Rglr Spl was ever received with matching SIC & AM to the "group"
- Determine if the first "C"sample is old enough to move the "group" to the SAF:

.I - First "C" sample of the "group" - over 30 days old + lag:
.A - We can assume that the Fed ICSP + lag has passed
.B - All of the sample "group" are treated as 'extra' samples
.C - Set the SSC to 4x
.D - Return to 'Process all samples of the "group"'

.II - First "C" sample of the "group" - less than or = to 30 days old + lag:
.A - Can not yet assume that the Fed ICSP + lag has passed
.B - Need to save the sample "group"
.C - Flag all samples of the "group" to be copied to the PSF
.D - Return to 'Process all samples of the "group"'

III.B.4.b.(II).(A).(2).(b) - At least one of the Regular Sample Dates of the "group" is non-blank:

- Fed Rglr Spl was received prior to the ICPD and is not in the CPA as a result
- Will need to process the "C" samples as Check Samples or Addl Anlys in the same manner as above:

.I - Determine the Fed ICPS based on the Regular Sample Date in the first "C" sample with the non-blank date and the Fed ICSP Check Field

.II- Process all samples of the "C" group:
- Check if SSC already set:

.A - SSC = 2x:
.1 - CPA "C" sample is Fed Addl Anlys sample
.2 - Add to Fed-Addl-Spl-Ctr
.3 - Return to 'Process all samples of the "C" group'

.B - SSC = 3x:
.1 - CPA "C" sample is Fed Check Sample
.2 - All of the Fed Addl Anlys samples have already been accounted for, thus set the Fed-Addl-Spl-Ctr = Fed-Reqd-Num-Addl-Anlys-Check Field
.3 - Return to 'Process all smaples of the "C" group'

.C - SSC = 3x:
- Determine if the "C" sample is within the Fed ICSP:

.1 - "C" sample - within Fed ICSP:
.a - Set the SSC using the same logic as in III.V.4.b.(II).(A).(1).(b).I
.b - Return to 'Prccess all samples of the "C" group'

.2 - "C" sample not within Fed ICSP:
.a - "C" sample is Federal Check Sample
.b - Set SSC to 3x
.c - Return to 'Prccess all samples of the "C" grcup'

III.B.4.b.(II).(A).(2).(b).III - When all samples of the "C" group have been processed, return to 'Process for each check sample "group"' and process the next "group" - after zeroing out the Fed-Addl-Spl-Ctr

III.B.4.b.(III) - When all of the "groups" gave been processed for Federal SSC determination, exit to 'PROCESS STATE SSC's'

III.B.4.c - PROCESS STATE SSC's:

III.B.4.c.(I) - Process State Regular Sample SSC's:
- CPA record Sample Type = "D" - Regular Sample

- Check the State SSC of the CPA record:

(A)- State SSC = 1:

(1)- State Regular Sample

(2)- Return to 'Process State Regular Sample SSC's'

(B)- State SSC = ∅ (blank):

(1)- CPA record is a new State Regular Sample

(2)- Set State SSC to 1

(3)- Return to 'Process State Regular Sample SSC's'

III.B.4.c.(II) - Process State Check Samples SSC's:

- Process each "group" of check samples - those Additional Anlysis (SSC = 2) or Check samples (SSC = 3) with the same Sample Id Code (SIC) and Analysis Method (AM) - in one pass of the logic, irrespective of Compliance Period dates.

(A)- Process for each check sample group:

- Determine if Rglr Spl (SSC = 1) with matching SIC & AM to "group" in Current Processing Array (CPA)

III.B.4.c.(II).(A).(1) - Rglr Spl with matching SIC & AM in CPA:

(a)- Determine the Initial Check Sampling Period (ICSP) - period during which the Additional Analysas (Addl Anlys) must be taken - based on the Sample Date of the Rglr Spl and the State ICSP Check Field:

(b)- Process all samples of the "group":

- Determine if the Sample Type "C" sample is within the State ICSP:

III.B.4.c.(II).(A).(1).(b).I - "C" sample - within State ICSP:

- Determine if enough Addl Anlys samples have already been taken by comparing the Sta-Addl-Spl-Ctr to Sta-Reqd-Num-Addl-Anlys-Check Field:

.A - Sta-Addl-Spl-Ctr less than Sta-Reqd-Num-Addl-Anlys-Check-Field:

.1 - "C" sample is State Addl Anlys sample

.2 - Set State SSC to 2

.3 - Add to Sta-Addl-Spl-Ctr

.4 - Return to 'Process all samples of the "group"' and process the rest of the samples of the "group".

.B - Sta-Addl-Spl-Ctr grtr than or = to Sta-Reqd-Num-Addl-Anlys-check-Field:

.1 - Enough State Addl Anlys samples already taken to process the violation

.2 - "C" sample is a State Check Sample

.3 - Set State SSC to 3

.4 - Return to 'Process all samples of the "group"

III.B.4.c.(II).(A).(1).(b).II - "C" sample not within the State ICSP:

.A - "C" sample is a State Check Sample

.B - Set State SSC to 3

.C - Return to 'Process all samples of the "group".

III.B.4.c.(II).(A).(1).(c) - When all samples of the "group" have been processed, return to 'Process for each check sample "group"' and process the next "group".

III.B.4.c.(II).(B).(2) - No State Rglr Spl with matching SIC or AM in CPA:

- State Rglr Spl not received at all
- Check the Regular Sample Dates in the sample "group":

III.B.4.c.(II).(B).(2).(a) - All of the Regular Sample Dates are blank:

- No State Rglr Spl was ever received with matching SIC & AM to the "group"
- Determine if the first "C" sample is old enough to move the "group" to the SAF:

.I - First "C" sample of the "group" - over 30 days old + lag:

.A - We can assume that the State ICSP + lag has passed

.B - All of the sample "group" are treated as 'extra' samples

.C - Set the State SSC to 4

.D - Return to 'Process all samples of the group'

.II- First "C" sample of the "group" - less than or = to 30 days old + lag:

.A - Can not assume that the State ICSP + lag has passed

.B - Need to save the sample "group"

.C - Flag all samples of the "group" to be copied to the PSF

.D - Return to 'Process all samples of the group'

III.B.4.c.(II).(B).(2).(b) - At least one of the Regular Sample Dates of the "group" is non-blank:

- State Rglr Spl was received prior to the ICPD and is not in the CPA as a result
- Will need to process the "C" samples as Check Samples or Addl Anlys in the same manner as above:

.I - Determine the State ICSP based on the Regular Sample Date in the First "C" sample with the non-blank date and the State ICSP Check Field

.II- Process all samples of the "C" group:

- Check if State SSC is already set:

.A - State SSC = 2:

.1 - CPA "C" sample is State Addl Anlys sample

.2 - Add to Sta-Addl-Spl-Ctr

.3 - Return to 'Process all samples of the "C" group'

.B - State SSC = 3:

.1 - CPA "C" sample is State Check Sample

.2 - All of the State Addl Anlys samples have already been accounted for, thus set the Sta-Addl-Spl-Ctr = Sta-Reqd-Num-Addl-Anlys-Check-Field

.3 - Return to 'Process all samples of the "C" group'

.C - State SSC = ∅ (blank):

- Determine if the "C" sample is within the State ICSP:

.1 - "C" sample - within State ICSP:

.a - Set the SSC using the same logic as in III.B.4.c.(II).(A).(1).(b).I

.b - Return to 'Process all samples of the "C" group'

.2 - "C" sample - not within State ICSP:

.a - "C" sample is State check sample

.b - Set State SSC to 3

.c - Return to 'Process all samples of the "C" group' .

.III- When all samples of the "C" group have been processed, return to 'Process for each check sample "group"' and process the next "group" - after zeroing out the Sta-Addl-Spl-Ctr

III.B.4.c.(III) - When all of the "groups" have been processed for State SSC determination, exit to 'PROCESS VIOLATIONS'

- PROCESS VIOLATIONS:

  - MCL:
    - As a matter of compliance policy, those situations in which the PWS is determined to be in violation of Federal MCL requirements are also processed as being in violation of State MCL requirements. Those situations in which the PWS is in violation only of the State MCL requirements are processed in the sections - PROCESS STATE MCL VIOLATIONS and PROCESS STATE CHECK SAMPLES.
    - Check if the PWS is "state-only":
    - PWS is "State-only" based on the 'Regulated-By' field in the Stored PWF record
      - Only State MCL violations are processed
      - exit to 'PROCESS STATE MCL VIOLATIONS'
    - PWS is not "State-only":
      - Process for both Federal and State MCL violations - below:

  - PROCESS FED & STATE MCL VIOLATIONS:
    - Process for each Rglr Spl to trigger a 'possible MCL violation', then the next section processes the confirmation or cancellation of the 'possible MCL violation'
    - Process for each Rglr Spl: (SSC = 11)
      - Check the Fed & State UFC's in the CPA Rglr Spl:
      - Fed & State UFC's = ⌀ (blank):
        - New Rglr Spl

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        * Set Fed MCL Check Field

        - Determine if the Rglr Spl is in 'possible MCL violation' by comparing the Analysis Result to the Fed MCL Check Field set above
        - Analysis Result grtr than Fed MCL Check Field:
          - Rglr Spl is in 'possible MCL violation'
          - Check the Sample Id Code (SIC) of the Rglr Spl:
          - Rglr Spl SIC = ⌀ (blank):
            - Will not be able to cancel the 'possible MCL violation' since the SIC is used to tie back the Addl Anlys and Check samples to the Rglr Spl in MCL violation
            - MCL violation is thus confirmed
            - Produce message "Rglr Spl with MCL violation and blank SIC" in Warnings Report
            - Set the Fed & State UFC's to "S"
            - Create Fed & State MCL Violation transactions for the VIF
            - Create Fed & State Check Sampling Violatioi transactions for the VIF
            - Flag the Rglr Spl to be copied to the new SAF
            - Assign new SAF Sample Key (date only)

- Return to 'PROCESS FED & STATE MCL VIOLATIONS'
- Rglr Spl SIC = non-⌀:
  - Will be able to process the confirmation or cancellation of the 'possible MCL violation' using the Addl Anlys and Check samples (if any) in the section for processing Rglr Spls with UPC of "M"
  - Set the Fed & State UPC's to "M"
  - No further action taken here
  - Return to 'Process for each Rglr Spl'
- Analysis Result - less than or = to Fed MCL Check Field:
  - Rglr Spl not in Fed MCL violation
  - Set the Fed UPC to "S"

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* Set State MCL Check Field

- Check if the State MCL Check Field is the same as the Fed:
- State MCL Check Field = Fed MCL Check Field:
  - Rglr Spl not in violation of Fed or State MCL
  - Set the State UPC to "S"
  - Flag the Rglr Spl to be copied to the new SAF
  - Assign new SAF Sample Key (date only)
  - Check the SIC in the Rglr Spl:
    - Rglr Spl SIC = ⌀:
      - Return to 'PROCESS FED & STATE MCL VIOLATIONS'
    - Rglr Spl SIC = non-⌀:
      - Check if more samples with the same SIC & AM in the CPA:
      - No more samples with the same SIC & AM in the CPA:
        - Return to 'PROCESS FED & STATE MCL VIOLATIONS'
      - More samples with the same SIC & AM in the CPA:
        - Addl Anlys or check samples taken when not needed
        - Process all of the samples in the group - except the Rglr Spl:
          - Set the Fed & State UPC's to "B"
          - Set the SSC to 44
          - Flag the sample to be copied to the new SAF
          - Assign new SAF Sample Key (date only)
          - Return to 'Process all of the samples in the group'

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- When done processing the group, return to 'PROCESS FED & STATE MCL VIOLATIONS'

- State MCL Check Field - less than Fed MCL Check Field:
  - Determine if the Rglr Spl is also in 'possible MCL violation' for the State by comparing the Analysis Result to the State MCL Check Field:
  - Analysis Result - grtr than State MCL Check Field:
    - Rglr Spl is in 'possible MCL violation' for the State
    - Rglr Spl is not in violation of Fed MCL
    - Set the State UPC to "S"
    - Check the SIC in the Rglr Spl:
    - Rglr Spl SIC = ⌀:
      - Will not be able to cancel the State 'possible MCL violation' since the SIC is used to tie back the Addl Anlys and Check samples to the Rglr Spl in MCL violation
      - State MCL violation is thus confirmed
      - Produce message "Rglr Spl with MCL violation and blank SIC" in the Warnings Report
      - Create State MCL violations transactions for the VIF
      - Create State Check Sampling Violation transactions for the VIF
      - Flag the Rglr Spl to be copied to the new SAF
      - Assign new SAF Sample Key (date only)
      - Return to 'PROCESS FED & STATE MCL VIOLATIONS'
    - Rglr Spl SIC = non-⌀:
      - Will be able to process the confirmation or cancellation of the 'possible MCL violation' using the Addl Anlys and Check samples (if any) in the section for processing Rglr Spls with UPC of "M"
      - Set State UPC to "M"
      - No further action taken here
      - Return to 'PROCESS FED & STATE MCL VIOLATIONS'
  - Analysis Result - less than or = to State MCL Check Field:
    - Process the same as 1 (pg. 853)
    - Return to 'PROCESS FED & STATE MCL VIOLATIONS'

- Fed UPC = "M":

- Further action delayed on Fed UFC = "M" in Rglr Spl - taken here
- Rglr Spl in Fed 'possible MCL violation'
- Process Addl Anlys and Check samples 9if any) to confirm or cancel the Fed 'possible MCL violation':
- Determine the Fed Initial Check Sampling Period (ICSP) based on the Sample Date of the Rglr Spl and the Fed ICSP Check Field:
- Check if Fed ICSP + lag has passed:
- Fed ICSP + lag - not yet passed:
  - No further MCL or Initial Check Sampling processing done yet
  - Flag all members of the sample "group" to be copied to the PSP
  - Return to 'PROCESS FED & STATE MCL VIOLATIONS'
- Fed ICSP + lag - has passed:
  - Check if the Sample Date of the Rglr Spl is within the Fed Regular Sampling Dates (RSPD) from the Stored CSP record:
    - Rglr Spl within the Fed PSPD's:
      - Set the Fed UFC to "S"
    - Rglr Spl less than Fed RSPD Start Date:
      - Set the Fed UFC to "R"
  - Process the Addl Anlys (if any) for Initial Check Sampling violaitons:
    - Count the number of Addl Anlys (Fed SSC = 2) with SIC & AM matching the Rglr Spl
    - Compare the number found with the Fed-Reqd-Num-Addl-Anlys Check Field:
      - Number found - less than Fed-Reqd-Num-Addl-Anlys Check Field:
        - Not enough Addl Anlys taken for Additional Analysis requirements
        - Create Fed Check Sampling Violation transactions for the VIF
      - Number found - grtr than or = to Fed-Reqd-Num-Addl-Anlys Check Field:
        - Enough Addl Anlys taken - no action taken

6

  - Process the Addl Anlys (if any) to confirm or cancel the MCL violation:
    - Sum the Analysis Results of the Addl Anlys samples with the Rglr Spl
    - Divide the sum obtained above by the number of Addl Anlys found + 1, giving the Average Analysis Result

    ---

    * Set the Fed MCL Check Field - use Sample Date of Rglr Spl

    ---

    - Compare the Average Analysis Result to the Fed MCL Check Field set above:

- Average Analysis Result - less than or = to Fed MCL Check Field:
  - Fed MCL violation cancelled
  - If the Fed Check Sampling Period Dates (CSPD) in the Stored CSF record are non-#, blank them out
  - Process all of the Addl Anlys (if any):
    - Set the Fed UFC to "B"
    - Set the Fed SSC to 4
    - Flag the sample to be copied to the new SAF
    - Assign new SAF Sample Key (date only)
    - Return to 'Process all of the Addl Anlys'
  - Check if any more samples with matching SIC & AM in CPA:
  - No more samples with matching SIC & AM in CPA:
    - Return to 'PROCESS FED & STATE MCL VIOLATIONS'
  - More samples with same SIC & AM in CPA:
    - Check samples taken when not needed
    - Process all of the samples the same as 2 above
    - When done processing the group, return to 'PROCESS FED & STATE MCL VIOLATIONS'
- Average Analysis Result - grtr than Fed MCL Check Field:
  - Fed & State 'possible MCL violation' thus confirmed
  - Create Fed & State MCL Viclation transactions for the VIF
  - Process all the Addl Anlys samples:
    - Check the Sample Date against Fed RSPD's:
      - Sample Date less than Fed RSPD Start Date:
        - Set the Fed UFC to "R"
      - Sample Date within Fed RSPD's:
        - Set the Fed UFC to "B"
    - Flag the sample to be copied to the new SAF
    - Assign new SAF Sample Key (date only)
    - Return to 'process all the Addl Anlys samples'
  - When done processing the Addl Anlys samples, determine the Fed & State CSPD's using the current date as the Start Date for both and adding the corresponding Fed or State Chk-Splg-

Prd Check Field (minus 1) to the Start Date, giving the End Date for each CSPD.
- Copy the CSPD's to the Stored CSF reocrd

- Process the Check Samples (if any) to remove the MCL violation:
  - Scan the CPA for Check samples (Fed SSC = 3) with matching SIC & AM to the Rglr Spl:
  - No Check samples found with matching SIC & AM to the Rglr Spl:
    - Return to 'PROCESS FED & STATE MCL VIOLATIONS'
  - Less than the Fed Reqd-Num-Neg-Chk-Spls Check Field number of Check samples found with SIC & AM matching the Rglr Spl:
    - Process the new Check samples: (Fed UFC = M)
      - Compare Analysis Result to the Fed MCL Check Field:
      - If Analysis Result grtr than Fed MCL Check Field, turn on 'mcl-viol' flag in the sample record
      - Check the Sample Date against the 3 Fed RSPD's:
        - Sample Date less than Fed RSPD Start Date:
          - Set Fed UFC to "R"
        - Sample Date within Fed RSPD's:
          - Set Fed UFC to "S"
      - Assign new SAP Sample Key (date only)
      - Return to 'Process the new Check samples'
    - When done processing the new Check samples:
      - Flag all the samples to be copied to the new SAP
      - Return to 'PROCESS FED & STATE MCL VIOLATIONS'
  - Number of Check samples with matching SIC & AM to Rglr Spl found in CPA grtr than or = to Fed Reqd-Num-Neg-Chk-Spls Check Field number:
    - There are now enough Check samples to process the cancellation of the MCL violation
    - Process the new Check samples:
      - Process the same as 3 above
      - Return to 'Process the new Check samples'
    - When done processing the new Check samples:

- Flag all the check samples to be copied to the new SAF
- Search the check sample group for consecutive samples with the 'mcl-viol' flag - off:
- Number of Check samples with 'mcl-viol' flag - off - grtr than or = to Fed Reqd-Num-Neg-Chk-Spls Check Field number:
  - Federal MCL violaiton cancelled
  - If the Fed CSPD's in the Stored CSP record are non-b, blank them out
  - Set the Fed UFC in all of the Check samples to "B"
  - Return to 'PROCESS FED & STATE MCL VIOLATIONS'
- Number of Check samples with 'mcl-viol' flag - off - not = to or grtr than Fed Reqd-Num-Neg-Chk-Spls Check Field Number:
  - Not enough negative Check samples to cancel the MCL violation
  - Fed & State MCL violation still in effect
  - No new Violation action taken
  - Return to 'PROCESS FED & STATE MCL VIOLATIONS'

- PROCESS FED ADDITIONAL ANALYSIS SAMPLES:
  - This section processes those Additional Analysis samples (Fed SSC = 2) not used in the previous section with the Rqlr Spl
  - Check the Fed UFC of the Addl Anlys:
  - Fed UFC = b (blank):
    - Check if the sample is flagged to be copied to the PSF:
    - Sample flagged to be copied to the PSF:
      - Sample already processed
      - Return to 'PROCESS FED ADDITIONAL ANALYSIS SAMPLES'
    - Sample not flagged to be copied to the PSF:
      - Sample not yet processed
      - Set Fed UFC to "B"
      - Set Fed SSC to 4
      - Flag the sample to be copied to the new SAF
      - Assign new SAF Sample Key (date only)
      - Produce message "Additional Analysis with SIC of xxx received too late to process" in the Warnings Report
      - Return to 'PROCESS FED ADDITIONAL ANALYSIS SAMPLES'
  - Fed UFC not = b:
    - Additional Analysis sample already processed
    - Return to 'PROCESS FED ADDITIONAL ANALYSIS SAMPLES'
- When done process all the Fed Additional Analysis samples, EXIT

- When all of the Rglr Spls and their asscciated Addl Anlys and Check samples have been processed for Fed & State MCL violation, the CPA still ahs to be scanned for Check sample groups without a matching Rglr Spl.

- PROCESS FED CHECK SAMPLES: (fcr removal of MCI violations)
  - Process each "group" of Check samples - all Sample Type "C", Fed SSC 3, with the same SIC & AM:
  - Examine the Fed UFC of the samples to determine if they have been processed
  - Any of the qroup - Fed UPC = "S" or "R":
    - Check smaple group has been processed before - look for any new Check samples:
    - No new Check Samples (Fed UPC = ⌀) found with matching SIC & AM:
      - Fed & State MCL violation - still in effect
      - No new violation action taken
      - Return to 'PROCESS FED CHECK SAMPLES' tc process the next grcup
      - Total number of Check samples in the group less than Fed-Reqd-Num-Neg-Chk-Spls Check Field:
        - Process the new Check samples:
        - Process the same as 3 above
        - Return to 'Process the new Check samples'
      - When done processing the new Check samples:
        - Flag all the Check samples to be copied to the new SAP
        - Return to 'PROCESS FED CHECK SAMPLES'
    - Total number of Check samples with matching SIC & AM grtr than or = to Fed-Reqd-Num-Neg-Chk-Spls Check Field:
      - There are now enough Check samples to process removal of the MCL violation
      - Process the new Check samples:
        - Process the same as 3 (pg. 857)
        - Return to 'Process the new Check samples'
      - When done processing the new Check samples:
        - Flag all the Check samples to be copied to the new SAP
        - Search the Check sample group for consecutive samples with 'mcl-viol' flag - off:
        - Number of Check samples with 'mcl-viol' flag - off - grtr than or = to Fed-Reqd-Num-Neg-Chk-Spls Check Field:
          - Process same as 4 (pg. 858)
          - Return to 'PROCESS FED CHECK SAMPLES'
        - Number of Check samples with 'mcl-viol' flag - off - less than Fed-Reqd-Num-Neg-Chk-Spls Check Field:
          - Process same as 5 (pg. 858)
          - Return to 'PROCESS FED CHECK SAMPLES'
  - All of the qroup - Fed UPC = ⌀:

- All are new Check samples
- Count the number of Check samples with matching SIC & AM (to the first) in the group
- Compare the number of Check samples with Fed-Reqd-Num-Neq-Chk-Spls Check Field:
- Less than the Fed-Reqd-Num-Neg-Chk-Spls Check Field number of check samples found in the CPA with matching SIC & AM:
  - Process the same as 5 (pg. 858)
  - When done, return to 'PROCESS FED CHECK SAMPLES'
- Number of Check samples found in CPA with matching SIC & AM grtr than or = to Fed-Reqd-Num-Neq-Chk-Spls Check Field:
  - Process same as 4 (pg. 858)
  - When done, return to 'PROCESS FED CHECK SAMPLES'

- PROCESS STATE MCL VIOLATIONS:
  - Process for each Rglr Spl to trigger a 'possible MCL violation', then the next section process the confirmation or cancellation of the 'possible MCL violation'
- Process for each Rglr Spl: (SSC = 11)
  - Check the State UFC in the Rglr Spl:
  - State UFC = Ø:
    - New Rglr Spl

    ---

    * Set the State MCL Check Field

    - Determine if the Rglr Spl is in 'possible MCI violation' by comparing the Analysis Result to the State MCL Check Field:
    - Analysis Result - grtr than State MCL Check Field:
      - Rglr Spl is in State 'possible MCL violation'
      - Check the Sample Id Code (SIC) in the Rglr Spl:
      - Rglr Spl SIC = Ø (blank):
        - Will not be able to cancel the 'possible MCI violation' since the SIC is used to tie back the Addl Anlys and Check samples (if any) to the Rglr Spl in MCL violation
        - State MCL violation is thus confirmed
        - Produce message "Rglr Spl with MCL violation and blank SIC" in the Warnings Report
        - Set the State UFC to "S"
        - Create State MCL Violation transactions for the VIF
        - Create State Check Sampling Violation transactions for the VIF
        - Flag the Rglr Spl to be copied to the new SAF
        - Assign new SAF Sample Key (date only)
        - Return to 'PROCESS STATE MCL VIOLATIONS'
      - Rglr Spl SIC = non-Ø:

- Will be able to process the confirmation or cancellation of the 'possible MCL violation' using the Addl Anlys and Check samples (if any) in the section for processing Rglr Spls with State UFC of "M"
- Set the State UFC to "M"
- No further processing here
- Return to 'Process for each Rglr Spl'

- Analysis Result - less than or = to State MCL Check Field:
  - Rglr Spl not in State MCL violation
  - Set the State UFC to "S"
  - Flag the Rglr Spl to be copied to the new SAF
  - Assign new SAF Sample Key (date only) to the Rglr Spl
  - Check the SIC in the Rglr Spl:
    - Rglr Spl SIC = ϕ:
      - Return to 'PROCESS STATE MCL VIOLATIONS'
    - Rglr Spl SIC = non-ϕ:
      - Check if more samples with the same SIC & AM in the CPA:
      - No more samples with the same SIC & AM in the CPA:
        - Return to 'PROCESS STATE MCL VIOLATIONS'
      - More samples with the same SIC & AM in the CPA:
        - Addl Anlys or Check samples taken when not needed
        - Process all of the samples in the group - except the Rglr Spl:
          - Set the State UFC to "B"
          - Set the State SSC to 4
          - Flag the sample to be copied to the new SAF
          - Assign new SAF Sample Key (date only)
          - Return to 'Process all of the samples in the group'
        - When done processing the group, return to 'PROCESS STATE MCL VIOLATIONS'

- State UFC = "M":
  - Further action delayed on State UFC = "M" in Rglr Spl - taken here
  - Rglr Spl in State 'possible MCL violation'
  - Process Addl Anlys and Check samples (if any) to confirm of cancel the State 'possible MCL violation'
  - As a matter of compliance processing policy, if the PWS is in violation of Fed MCL as well as State, the State processing will use the Fed Initial Check Sampling Period (ICSP) Check

Field - since it is always the longer of the two (Fed or State). If the PWS is being processed for a Fed MCL violation as well as the State, the Fed UFC will be something other than blank (Ø) in the Rglr Spl record.

- Check the Fed UFC to determine which ICSP (Fed or State) field to use:
  - Fed UFC = Ø
    - The PWS is only in State MCL violation
    - The State ICSP Check Field is used
  - Fed UFC = non-Ø:
    - The PWS is in Fed MCL violation as well as State
    - The Fed ICSP Check Field is used
- Determine if the ICSP + lag has passed:
- ICSP + lag - not yet passed:
  - No further MCL or Initial Check Sampling processing done yet
  - Flag all members of the sample group to be copied to the PSP
  - Return to 'PROCESS STATE MCL VIOLATIONS'
- ICSP + lag - has passed:
  - Check if the Sample Date of the Rglr Spl is within the State Regular Sampling Dates (RSPD) from the Stored CSF record:
    - Rglr Spl within the State RSPD's:
      - Set the State UFC to "S"
    - Rglr Spl less than State RSPD Start Date:
      - Set the State UFC to "R"
  - Process the Addl Anlys (if any) for Initial Check Sampling violations:
    - Process the same as 6(pg.855)except that State fields are used instead of Fed and State Violation transactions are created instead of Fed
  - Process the Addl Anlys (if any) to confirm or cancel the MCL violation:
    - Sum the Analysis Results of the Addl Anlys with the Rglr Spl
    - Divide the sum obtained above by the number of Addl Anlys + 1, giving the Average Analysis Result

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* Set the State MCL Check Field

  - Compare the Average Analysis Result to the State MCL Check Field:
  - Average Analysis Result - less than or = to State MCL Check Field:
    - State MCL violation cancelled
    - Create PWF transaction to reinitialize the Alternate Sampling Frequency field for this Contaminant-Id
    - Process all of the Addl Anlys (if any):

- Process the same as 2 (pg.856) 7 except set the State fields in the sample record instead of the Fed
- Check if any more samples with matching SIC & AM in the CPA:
- No more samples with matching SIC & AM in the CPA:
  - Return to 'PROCESS STATE MCL VIOLATIONS'
- More samples with the same SIC & AM in the CPA:
  - Check samples taken when not needed
  - Process all of the samples the same as 7 above
  - Return to 'PROCESS STATE MCL VIOLATIONS'

- Average Analysis Result - grtr than State MCL Check Field:
  - State 'possible MCL violation' confirmed
  - Create State MCL Violation transactions for the VIF
  - Process all the Addl Anlys samples:
    - Check the Sample Date against the State RSPD's:
      - Sample Date less than State RSPD Start Date:
        - Set the State UFC to "R"
      - Sample Date within State RSPD's:
        - Set the State UFC to "S"
    - Flag the sample to be copied to the new SAF
    - Assign new SAF Sample Key (date only)
    - Return to 'Process all the Addl Anlys samples'
  - When done processing the Addl Anlys samples, determine the State CSPD's using the current date as the Start Date and adding the State Chk-Splg-Prd Check Field (minus 1) to the Start Date, giving the End Date for the CSPD
  - Copy the CSPD's to the Stored CSF record

- Process the Check samples (if any) to remove the MCL violation:
  - Scan the CPA for Check samples (State SSC = 3) with matching SIC & AM to the Rglr Spl:
  - No Check samples found with matching SIC & AM to the Rglr Spl:
    - Return to 'PROCESS STATE MCL VIOLATIONS'

- Less than the State Reqd-Num-Neg-Chk-Spls Check Field number of Check samples found with SIC & AM matching the Rglr Spl:
  - Process the new Check samples: (State UFC = ∅)
    - Process the same as 3 (pg. 857) except that the State fields and dates are used and set instead of the Fed
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  - When done processing the new Check samples:
    - Flag all the samples to be copied to the new SAF
    - Return to 'PROCESS STATE MCL VIOLATIONS'
- Number of Check samples with matching SIC & AM to Rglr Spl found in CPA grtr than or = to State Reqd-Num-Neg-Chk-Spls Check Field number:
  - There are now enough Check samples to process the cancellation of the MCL violation
  - Process the new Check samples:
    - Process the same as 8 above
    - Return to 'Process the new Check samples'
- When done processing the new Check samples:
  - Flag all the Check samples to be copied to the new SAF
  - Search the Check sample group for consecutive samples with the 'mcl-viol' flag - off:
  - Number of Check samples with 'mcl-viol' flag - off - grtr than or = to State Reqd-Num-Neg-Chk-Spls Check Field number:
    - State MCL violation cancelled
    - If the State CSPD's in the Stored CSF record are non-∅, blank them out
    - Create PWF transaction to reinitialize the Alternate Sampling Frequency field for this Contaminant-Id
    - Set the State UFC in all the Check samples to "B"
    9
    - Return to 'PROCESS STATE MCL VIOLATIONS'
  - Number of Check samples with 'mcl-viol' flag - off - not = to or grtr than State Reqd-Num-Neg_Chk-Spls Check Field number:
    - Not enough negative Check samples to cancel the MCL violation

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- State MCL violation still in effect
- No new Violation action taken
- Return tc 'PROCESS STATE MCL VIOLATIONS'

- PROCESS STATE ADDITIONAL ANALYSIS SAMPLES:
  - This section processes those Additional Analysis samples (State SSC = 2) not used in the previous section with the Rglr Spl
  - Check the State UFC of the Addl Anlys sample:
  - State UFC = ⌀ (tlank):
    - Check if the sample is flagged to be copied to the PSF:
    - Sample flagged to be copied to the PSF:
      - Sample already processed
      - Return to 'PROCESS STATE ADDITIONAL ANALYSIS SAMPLES'
    - Sample <u>not</u> flagged to be copied to the PSF:
      - Sample not yet processed
      - Set State UFC to "B"
      - Set State SSC to 4
      - Flag the sample to be copied to the new SAF
      - Assign new SAF Sample Key (date only)
      - Produce message "Additional Analysis with SIC of xxx received toc late to process" in the Warnings Report
      - Return to 'PROCESS STATE ADDITIONAL ANALYSIS SAMPLES'
  - State UFC not = ⌀:
    - Additional Analysis sample already processed
    - Return to 'PROCESS STATE ADDITIONAL ANALYSIS SAMPLES'
- When done processing all the State Additional Analysis samples, EXIT
    - When all of the Rglr Spls and their associated Addl Anlys and Check samples have been processed for State MCL violations, the CPA still has to be scanned for Check sample groups without a matching Rglr Spl.

    - PROCESS STATE CHECK SAMPLES: (for removal of MCL violations)
      - Process each "group" of Check samples - all Sample Type "C", State SSC = 3, with the same SIC & AM:
      - Examine the State UFC of the samples to determine if they have been processed
      - Any of the group - State UFC = "S" or "R":
        - Check sample group has been processed before - lock for new Check samples:
        - No new Check Samples (State UFC = ⌀) found with matching SIC & AM:
          - State MCL violation - still in effect
          - No new violation action taken
          - Return to 'PROCESS STATE CHECK SAMPLES' to process the next group
        - Total number of Check samples in the group less than Sta-Reqd-Num-Neg-Chk-Spls Check Field:
          - Process the new Check samples the same as 8 above
          - When done processing the new Check samples:

- Flag all the Check samples to be copied to the new SAF
- Return to 'PROCESS STATE CHECK SAMPLES'

- Total number of Check samples with matching SIC & AM grtr than or = to Sta-Reqd-Num-Neg-Chk-Spls Check Field:
  - There are now enough Check samples to process removal of the MCL violation
  - Process the new Check samples the same as 8 above
  - When done processing the new Check samples:
    - Flag all the Check samples to be copied to the new SAF
    - Search the Check sample group for consecutive samples with 'mcl-viol' flag - off:
    - Number of Check samples with 'mcl-viol' flag - off - grtr than or = to Sta-Reqd-Num-Neg-Chk-Spls Check Field:
      - Process same as 9 (pg. 864)
      - Return to 'PROCESS STATE CHECK SAMPLES'
    - Number of Check samples with 'mcl-viol' flag - off - less than Sta-Reqd-Num-Neg-Chk-Spls Check Field:
      - Process the same as 10 (pg.864)
      - Return to 'PROCESS STATE CHECK SAMPLES'

- All of the group - State UFC = ⌀:
  - All are new Check samples
  - Count the number of Check samples with mathcing SIC & AM (to the first) in the group
  - Compare the number of Check samples with Sta-Reqd-Num-Neg-Chk-Spls Check Field:
  - Less than the Sta-Reqd-Num-Neg-Chk-Spls Check Field number of Check samples found in the CPA with matching SIC & AM:
    - Process the same as 10 (pg. 864)
    - Return to 'PROCESS STATE CHECK SAMPLES'
  - Number of Check samples found with matching SIC & AM grtr than or = to Sta-Reqd-Num-Neg-Chk-Spls Check Field:
    - Process the same as 9 (pg. 864)
    - Return to 'PROCESS STATE CHECK SAMPLES'

- **PROCESS VIOLATIONS:**

  - SAMPLING:
    - If the PWS is "State-only", as shown by the 'Regulated-By' field in the Stored PWF record, exit to 'PROCESS STATE REGULAR SAMPLES'

    - PROCESS FEDERAL REGULAR SAMPLES:
      - Check for Fed SPLG VE ARRAY record:
      - No record found in Fed SPLG VE ARRAY:
        - No Fed Sampling V&E in effect - Normal Regular Sampling Period processing
        - Check if Fed RSPD + lag has passed:
        - Fed RSPD + lag - has passed:
          - Turn off Fed Rglr-Splg-Warning switch

          ---

          * PROCESS FED RGLR SPLG VIOLATIONS

          ---

          * RESET FED UFC's

        1
          - Set the new Fed RSPD's:
            - New Fed RSPD Start Date = old Fed RSPD End Date + 1 day
            - New Fed RSPD End Date = old Fed RSPD End Date + Fed Rglr-Splg-Prd Check Field length
          - Copy the new Fed RSPD's to the Stored CSF record
          - Fed RSPD + lag - not yet passed:
          - No processing until lag has passed
          - EXIT
      - Record found in Fed SPLG VE ARRAY
        - Fed Sampling V&E may still be in effect
        - Check the End Date of the Fed SPLG VE ARRAY record
        - End Date = ∅ (blank)
          - Fed Sampling V&E still in effect
        - Check the Start Date of the Fed SPLG VE ARRAY record:
        - Fed SPLG VE ARRAY record Start Date - less than or = to Fed RSPD Start Date:
          - Fed SPLG VE ARRAY record Start Date - less than or = to Fed RSPD Start Date:
          - Fed SPLG VE ARRAY record Start Date - less than or = to Fed RSPD Start Date:
            - Normal Fed Rglr Splg prccessing while under a sampling V&E
            - Check if Fed RSPD + lag has passed:
            - Fed RSPD + lag - has passed:
              - Turn off the Red Rglr-Splg-Warning switch

              ---

              * PROCESS FED RGLR SPLG VIOLATIONS

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              * RESET FED UFC's

              - Set the new Fed RSPD's:

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            - New Fed RSPD Start Date = old Fed RSPD
              End Date + 1 day
            - New Fed RSPD End Date = old Fed RSPD
              End Date + Fed SPLG VE ARRAY record
              ALT-SPLG field value
         - Copy the new Fed RSPD's to the Stored CSF
           record
         - EXIT
   - Fed SPLG VE ARRAY record Start Date - grtr than
     Fed RSPD Start Date but within Fed RSPD + lag:
      - Transition to sampling V&E period
      - Turn on the Fed Rglr-Splg-Warning switch
      ----------------------------------
      * PROCESS FED RGLR SPLG VIOLATIONS -
      ----------------------------------
      * RESET FED UFC's
      ----------------------------------
      - Set the new Fed RSPD's:
         - New Fed RSPD Start Date = Fed SPLG VE
           ARRAY record Start Date field
         - New Fed RSPD End Date = (Fed SPLG VE
           ARRAY record Start Date + Fed SPLG VE
           ARRAY record ALT-SPLG field value) minus
           1 day
      - Copy the new Fed RSPD's to the Stored CSF
        record
      - EXIT
   - Fed SPLG VE ARRAY record Start Date - grtr than
     Fed RSPD + lag:
      - Normal Regular Sampling Period
      - Process the same as 1 (pg. 868)
      - EXIT
- End Date (of the Fed SPLG VE ARRAY record) - less
  than Fed RSPD Start Date:
   - Normal Rglr sampling processing
   - Process the same as 1 (pg. 868)
   - EXIT
- End Date - within the Fed RSPD's:
   - Transition to Normal sampling period
   - Not concerned with Start Date of V&E
   - Turn on Fed Rglr-Splg-Warning switch
   ---------------------------------
   * PROCESS FED RGLR SPLG VIOLATIONS
   ---------------------------------
   * RESET FED UFC"s
   ---------------------------------
   - Set the new Fed RSPD's:
      - New Fed RSPD Start Date = Fed SPLG VE ARRAY
        record End Date + 1 day
      - New Fed RSPD End Date = Fed SPLG VE ARRAY
        record End Date + Fed Rglr-Splg-Prd Check
        Field length
   - Copy the new Fed RSPD's to the Stored CSF
     record
   - Blank out the Fed SPLG VE ARRAY record
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```
        - EXIT
      - End Date - within the lag dates of the Fed RSPD +
        lag:
        - Transition to Normal sampling period
        - Not concerned with Start Date of the V&E
        - Turn on the Fed Rglr-Splg-Warning switch
        ---------------------------------
        * PROCESS FED RGLR SPLG VIOLATIONS
        ---------------------------------
        * RESET FED UPC's
        ---------------------------------
        - Set the new Fed RSPD's:
          - New Fed RSPD Start Date = old Fed RSPD End
            Date + 1 day
        2 - New Fed RSPD End Date + old Fed RSPD End
            Date + Fed Rglr-Splg-Prd Check Field length
        - Copy the new Fed RSPD's to the Stored CSF
          record
        - Blank out the Fed SPLG VE ARRAY record
        - EXIT
      - End Date - qrtr than Fed RSPD + lag:
        - Transition to Normal sampling period
        - Not concerned with Start Date of the V&E
        - Turn off the Fed Rglr-Splg-Warning switch
        ---------------------------------
        * PROCESS FED RGLR SPLG VIOLATIONS
        ---------------------------------
        * RESET FED UPC's
        ---------------------------------
        - Set the new Fed RSPD's:
          - Process the same as 2 above
        - Copy the new Fed RSPD's to the Stored CSF
          record
        - Blank out the Fed SPLG VE ARRAY record
        - EXIT

- PROCESS FEDERAL CHECK SAMPLING VIOLATIONS:
  - Check the Fed CSPD in the Stored CSF record:
  - Fed CSPD = ⊮:
    - No Check sampling is required for Fed
    - EXIT
  Fed CSPD = non-⊮:
    - Federal Check sampling required
    - Check if the Fed Check Sampling Period Dates
      (CSPD) + lag has passed:
    - Fed CSPD + lag - has passed:
      - Process CSPD for Fed Check Sampling violations:
        - Scan the CPA for Fed Check samples (Fed SSC
          = 3) whose Sample Date falls within the Fed
          CSPD's:
          - At least one Fed Check sample within Fed
            CSPD's:
            - No Federal Check Sampling violation
            - No further action taken here
          - No Fed Check sample within Fed CSPD's:
```

- Federal Check Sampling violation
- Create Fed Check Sampling Violation transactions for the VIF
- Create Fed SAF Dummy Check sample and store in SAF Dummy Check Samples Array (SAF-DCSA)

- Set the new Fed CSPD's:
- New Fed CSPD Start Date = old Fed CSPD End Date + 1 day
- New Fed CSPD End Date = old Fed CSPD End Date + Fed Followup Check Sampling Period Check Field
- Copy the new Fed CSPD's to the Stored CSF record
- EXIT

- Fed CSPD + lag - not yet passed:
- Too early to process Federal Check Sampling violations
- EXIT

- PROCESS STATE REGULAR SAMPLES:
- Check for State SPLG VE ARRAY record:
- No record foun in State SPLG VE ARRAY
- No State Sampling V&E in effect
- Check if State RSPD + lag has passed
- State RSPD + lag - has passed:
- Turn off State Rglr-Splg-Warning switch

---

* PROCESS STATE RGLR SPLG VIOLATIONS

---

* RESET STATE UPC's

- Set the new State RSPD's:
- New State RSPD Start Date = old State RSPD End Date + 1 day
- New State RSPD End Date = old State End Date + State Rglr-Splg-Prd Check Field length
- Copy the new State RSPD's to the Stored CSF record
- EXIT

- State RSPD + lag - not yet passed:
- No processing until lag has passed
- EXIT

- Record found in State SPLG VE ARRAY:
- State Sampling V&E may still be in effect
- Check the End Date of the State SPLG VE ARRAY record:
- End Date = ∅:
- State Sampling V&E still in effect
- Check the Start Date of the State SPLG VE ARRAY record:
- State SPLG VE ARRAY record Start Date - less than or = to State RSPD Start Date:
- State SPLG VE ARRAY record Start Date - less than or = to State RSPD Start Date:

- Normal State Rglr Splg processing while under a sampling V&E
- Check if the State RSPD + lag has passed:
- State RSPD + lag - has passed:
  - Turn off the State Rglr-Splg-Warning switch

  ---

  * PROCESS STATE RGLR SPLG VIOLATIONS

  ---

  * RESET STATE UFC's

  - Set the new State RSPD's:
    - New State RSPD Start Date = old State RSPD End Date + 1 day
    - New State RSPD End Date = old State RSPD End Date + State SPLG VE ARRAY record ALT-SPLG field value
  - Copy the new State RSPD's to the Stored CSF record
  - EXIT
- State RSPD + lag - not yet passed:
  - No processing until lag has passed
  - EXIT

- State SPLG VE ARRAY record Start Date - grtr than State RSPD Start Date but within State RSPD + lag:
  - Transition to sampling V&E period
  - Turn on the State Rglr-Splg-Warning switch

  ---

  * PROCESS STATE RGLR SPLG VICLATIONS

  ---

  * RESET STATE UFC's

  - Set the new State RSPD's:
    - New State RSPD Start Date = State SPLG VE ARRAY record Start Date field
    - New State RSPD End DAte = (State SPLG VE ARRAY record Start Date + State SPLG VE ARRAY record ALT-SPLG field value) minus 1 day
  - Copy the new State RSPD's to the Stored CSF record
  - EXIT
- State SPLG VE ARRAY record Start Date - grtr than State RSPD + lag:
  - Normal Sampling
  - Process the same as 3 (pg. 870)
  - EXIT

- End Date (of the State SPLG VE ARRAY record) - less than State RSPD Start Date:
  - Normal Rglr sampling processing
  - Process the same as 3 (pg. 870)
  - EXIT
- End Date - within the State RSPD's:
  - Transition to Normal sampling period

```
            - Not concerned with start Date of the V&E
            - Turn on State Rglr-Splg-Warning switch
            ------------------------------------
            * PROCESS STATE RGLR SPLG VIOLATIONS
            ------------------------------------
            * RESET STATE UFC's
            ------------------------------------
            - Set the new State RSPD's:
               - New State RSPD Start Date = State SPLG VE
                 ARRAY record End Date + 1 day
               - New State RSPD End Date = State SPLG VE
                 ARRAY record End Date + State Rglr-Splg-Prd
                 Check Field length
            - Copy the new State RSPD's to the Stored CSF
              record
            - Blank out the State SPLG VE ARRAY record
            - EXIT
         - End Date - within the lag dates of the State RSPD
           + lag:
            - Transition to Normal sampling period
            - Not concerned with the Start Date of the V&E
            - Turn on State Rglr-Splg-Warning switch
            ------------------------------------
            * PROCESS STATE RGLR SPLG VIOLATIONS
            ------------------------------------
            * RESET STATE UFC's
            ------------------------------------
            - Set the new State RSPD's:
               - New State RSPD Start Date = old State RSPD
                 End Date + 1 day
               - New State RSPD End Date = old State RSPD End
                 Date + State Rglr-Splg-Prd-Check Field
                 length
            - Copy the new State RSPD's to the Stored CSF
              record
            - Blank out the State SPLG VE ARRAY record
            - EXIT
         - End Date - grtr than State RSPD flag:
            - Transition to Normal smapling period
            - Not concerned with the Start Date of the V&E
            - Turn off the State Rglr-Splg-Warning switch
            ------------------------------------
            * PROCESS STATE RGLR SPLG VIOLATIONS
            ------------------------------------
            * RESET STATE UFC's
            ------------------------------------
            - Set the new State RSPD's:
               - Process the same as 4 above
            - Copy the new State RSPD's to the Stored CSF
              record
            - Blank out the State SPLG VE ARRAY record
            - EXIT

      - PROCESS STATE CHECK SAMPLING VIOLATIONS:
            - Check the State CSPD in the Stored CSF record:
```

- State CSPD = ∅:
  - No Check sampling is required for State
  - EXIT
- State CSPD = non-∅:
  - State Check sampling required
  - Check if the State Check Sampling Period Dates (CSPD) + lag has passed
  - State CSPD + lag - has passed:
    - Process CSPD for State Check Sampling violations:
      - Scan the CPA for State Check sample (State SSC = 3) whose Sample Date falls within the State CSPD's:
        - At least one State Check sample within State CSPD's:
          - No State Check Sampling viclation
          - No further action taken here
        - No State Check sample within State CSPD's:
          - State Check Sampling violation
          - Create State Check Sampling Viclation transactions for the VIF
          - Check the SAF Dummy Check Samples Array (SAF-DCSA) tc see if any of the records fall within the State CSPD's:
            - No records in the SAF-DCSA fall within the State CSPD's:
              - Create State SAF Dummy Check sample and store in SAF-DCSA
            - Record found in the SAF-DCSA which falls within the State CSPD's:
              - Do <u>not</u> create a new SAF Dummy Check sample
              - Modify the sample record in the SAF-DCSA to include State info
      - Set the new State CSPD's:
        - New State CSPD Start Date = old State CSPD End Date + 1 day
        - New State CSPD End DAte = old State CSPD End Date + State Followup Check Sampling Period Check Field
      - Copy the new State CSPD's to the Stored CSF record
      - EXIT
  - State CSPD + lag - not yet passed:
    - Too early to process State Check Sampling violations
    - EXIT

- **PROCESS FED RGLR SPLG VIOLATIONS:**
  - Scan the Current Processing Array (CPA) for Rglr Spls (SSC = 11) whose Sample Date falls within the Fed Regular Sampling Period Dates (RSPD's)
  - At least one Rglr Spl within Fed RSPD's:
    - No Fed Regular Sampling violation
    - EXIT
  - No Rglr Spls within Fed RSPD's:
    - Fed Regular Sampling violation
    - Check Fed Rglr-Splg-Warning switch:
      - Fed Rglr-Splg-Warning switch - off:
        - Create Fed VIFI-R-REPT-RECORD
        - Create Fed Regular Sampling Violation transactions for the VIP
      - Fed Rglr-Splg-Warning switch - on:
        - Produce message "No Rglr Spls taken within the period xx/xx/xx to xx/xx/xx" in the Warnings Report
    - EXIT

- **PROCESS STATE RGLR SPLG VIOLATIONS:**

  - Scan the CPA for Rglr Spls (SSC = 11) whose Sample Date falls within the State Regular Sampling Period Dates (RSPD's)
  - At least one Rglr Spl within State RSPD's:
    - No State Rglr Splg violation
    - EXIT
  - No Rglr Spls within State RSPD's:
    - State Regular Sampling violation
    - Check State Rglr-Splg-Warning switch:
      - State Rglr-Splg-Warning switch - off:
        - Create VIPI-R-REPT-RECORD
        - Create State Regular Sampling Violation transactions for the VIP
      - State Rglr-Splg-Warning switch - on:
        - Produce message "No Rglr Spls taken within the period xx/xx/xx to xx/xx/xx" in the Warnings Report
    - EXIT

- Set_Fed_MCL_Check_Field:
  - Use the Sample Date of the CPA sample record being checked for MCL violation - unless the Sample Date of the Rglr Spl is specified instead.
  - Check if any records in the Fed MCL VE ARRAY:
  - No records in the Fed MCL VE ARRAY
    - No Fed MCL V&E in effect
    - Load the Fed MCL Check value from the Fed IRT into the Fed MCL Check Field
    - EXIT
  - Record(s) in the Fed MCL VE ARRAY:
    - Check the Sample Date against the Start Date and End Date of each Fed MCL VE ARRAY reocrd to find a matching V&E record:
    - Fed MCL VE ARRAY record found whose dates include the Sample Date:
      - Load the MOD-MCL field value from the Fed MCL VE ARRAY record into the Fed MCL Check Field
      - EXIT
    - No Fed MCL VE ARRAY record found whose dates include the Sample Date:
      - Load the Fed MCL Check value from the Fed IRT into the Fed MCL Check Field
      - EXIT

- Set State MCL Check Field:
  - Use the Sample Date of the CPA sample record being checked for MCL violation - unless the Sample Date of the Rglr Spl is specified instead.
  - Check if any records in the State MCL VE ARRAY:
  - No records in the State MCL VE ARRAY:
    - No State MCL V&E in effect
    - Load the State MCL Check value from the State IRT intc the State MCL Check Field
    - EXIT
  - Record(s) in the State MCL VE ARRAY:
    - Check the Sample Date against the Start Date and End Date of each State MCL VE ARRAY record to find a matching V&E record:
    - State MCL VE ARRAY record found whose dates include the Sample Date:
      - Load the MOD-MCL value from the State MCL VE ARRAY record into State MCL Check Field
      - EXIT
    - No State MCL VE ARRAY record found whose dates include the Sample Date:
      - Load the State MCL Check value from the State IRT into the State MCL Check Field
      - EXIT

- RESET FED UFC's:

  - Process the Current Sample Array (CPA) by Fed UFC, Sample Date, and Fed Rglr Splg Prd Dates (RSPD's):
  - Check the Sample Date of the sample:
  - Sample Date - less than Fed RSPD Start Date:
    - Set Fed UFC to "B"
    - Return to 'RESET FED UFC's'
  - Sample Date - grtr than Fed RSPD End Date:
    - Done processing the CPA
    - EXIT
  - Sample Date - within Fed RSPD's:
    - Check the Fed UFC:
    - Fed UFC = "S":
      - Change the Fed UFC to "B"
      - Return to 'RESET FED UFC's'
    - Fed UFC = "R":
      - No action taken
      - Return to 'RESET FED UFC's'
- When done processing all the CPA samples, EXIT

- RESET STATE UFC's:

  - Process the Current Sample Array (CPA) by State UFC, Sample Date, and State Rglr Splg Prd Dates (RSPD's):
  - Check the Sample Date of the sample:
  - Sample Date - less than State RSPD Start Date:
    - Set State UFC to "B"
    - Return to 'RESET STATE UFC's'
  - Sample Date - qrtr than State RSPD End Date:
    - Done processing the CPA
    - EXIT
  - Sample Date - within State RSPD's:
    - Check the State UFC:
    - State UFC = "S":
      - Change the STate UFC to "B"
      - Return to 'RESET STATE UFC's'
    - State UFC = "R":
      - No action taken
      - Return to 'RESET STATE UFC's'
- When done processing all the CPA samples, EXIT

Model State Information System
Training Program

Volume XII

PROGRAM DOCUMENTATION
Subsystem Descriptions

PART 3

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Bacteriological Appendices
Appendix A.4

Determination of compliance period (CPD) dates:

(Refer to Appendix B.4 for determination of PWS compliance type -- Monthly, Quarterly, or Special)

For Monthly PWS's:

- input consists of current processing date and Lag time from the "PROC" options found in the header record of the input SAF, and compliance cycle number (CC) from the PWF or processing options
- convert processing date to Julian format
- subtract Lag
- re-convert to Calendar format: (M, D, Y)
- determine CPD start month (MN):

$$\text{CPD start month} = \begin{cases} M - 1 & \text{if } D \geq CC \\ M - 2 & \text{if } D < CC \end{cases}$$

- set CPD start day (DA) = CC
- make necessary adjustments for end of year if above computations yield MN < 1
- CPD start date is (MN, DA, Y) converted to Julian format
- CPD end date is (MN+1, DA-1, Y) converted to Julian format

For Quarterly PWS's:

Quarters are three months in length and are fixed. PWS's required to monitor quarterly are all processed at the same time. The quarters and the months in which they are processed are as follows:

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Quarter	Processed in
January - March (1/1 - 3/31)	April
April - June (4/1 - 6/30)	July
July - September (7/1 - 9/30)	October
October - December (10/1 - 12/31)	January

Processing is done for quarterly PWS's in the indicated month as soon as the Lag time has expired after the end of the quarter.

For Special PWS's:

For special PWS's the length of the compliance period is taken from the PWF record for the PWS:

- Length = PWF-STATE-MCOM-SAMPLE-FREQ
- Obtain the end date of the previously processed CPD from the CSF
- set CPD start = previous CPD end + 1 day
- set CPD end = previous CPD end + Length
- if (processing date - Lag - CPD end) is greater than Length, repeat the last 2 steps using the newly computed values for "previous" values until (processing date - Lag - CPD end) is less than Length.

Appendix B.4

Determination of PWS Compliance Type:

For "community" PWS's (PWP-PLANT-TYPE = "C"):

- if PWP-STATE-NO-OF-SAMPLES is greater than zero, the PWS is Quarterly, otherwise, it is Monthly

For "non-community" PWS's (PWP-PLANT-TYPE = "N")

- examine PWP-STATE-NCOM-SAMPLE-FREQ
- if it is 30, the PWS is Monthly
- if it is 90, the PWS is Quarterly
- if it is any other non-zero value, the PWS is Special
- if it is zero, use the default value from the Federal regulations (RGP-BACT-NCOM-SAMPLING-PERIOD), which will be "M" for Monthly or "Q" for Quarterly

Appendix C.9 Build Internal Compliance Tables

The following tables are built to hold the unique regulation values for a given Public Water System being examined for compliance. Two such tables are built; one for Federal values and one for State values. Values which are not unique to a given Public Water System may be taken directly from the Regulation Tables (Federal or State).

The procedures should be performed twice, once using Federal values (RGF-BACT-REGU-LEVEL = 'FP') and once for State values (RGF-BACT-REGU-LEVEL = 'SP'), unless otherwise indicated.

Note: Items beginning with RGF - obtained from system RGF

Items beginning with PWF - obtained from system PWF

Determine total number of samples required:

For "non-community" PWS's (PWF-PLANT-TYPE = "N"):

- if PWF-STATE-NO-OF-SAMPLES is greater than zero, Total Samples (Fed/State) = PWF-STATE-NO-OF-SAMPLES (same for Fed and State)
- otherwise use default value from the regulations, Total Samples (Fed/State) = RGF-BACT-NCOM-SAMPLE-FREQ (Fed/State)

For "community" PWS's (PWF-PLANT-TYPE = "C"):

- If PWS compliance type is Monthly, compare PWF-PLANT-POPULATION-SERVED with the entries in the Federal and State population tables to get the required Total Samples (Fed/State) for this population range

- if PWS is Quarterly, Total Samples (Fed/State) = PWP-STATE-NO-OF-SAMPLES (same for Fed and State)

Determine allowable chlorine residual substitutions and number of regular samples required:

- set Percent = RGP-BACT-CHL-MAX-PERCENT (Fed/State)
- if PWP-STATE-CHLORINE is less than Percent, set Percent = PWP-STATE-CHLORINE
- set Templ = Total Samples (Fed/State) * Percent / 100
- set Chlorine Samples (Fed/State) = Templ * RGP-BACT-CHL-SAMPLES-IN-LIEU (Fed/State)
- determine number of regular samples required (methods other than chlorine residual substitution):

  Regular Samples (Fed/State) = Total Samples (Fed/State) - Templ

Determine Check Sampling Requirements:

- normal minimum number of daily check samples when check samples are required is:

  Min Daily Checks = 1 (same for Fed and State)

- however, this may be overridden, if PWP-STATE-MIN-NO-DAILY-CHECKS is not blank,

  Min Daily Checks = PWP-STATE-MIN-NO-DAILY-CHECKS (same for Fed and State)

Determine number of consecutive negative check samples required to deny a possible MCL violation:

For Membrane Filter Analysis Method:

- both Fed and State requirements are set to the Fed value:

  Consec Neg = RGP-BACT-CHK-MIN-COLIFORM-BACT (Fed only)

  unless more stringent requirements are specified for this PWS:

  - if PWP-STATE-MCL-HALT-CHECK-SAMP is greater than RGP-BACT-CHK-MIN-COLIFORM-BACT,

    Consec Neg = PWP-STATE-MCL-HALT-CHECK-SAMP (same for Fed and State)

For Fermentation Tube Analysis Method (with either size sample):

- same as for Membrane Filter method except use RGP-BACT-CHK-MIN-NEG-PORTIONS (Fed value only) unless overridden by PWP-STATE-MCL-HALT-CHECK-SAMP

Appendix E.4

Edit for Compliance:

- read the Compliance Status File (CSF) until a record with matching PWS ID and contaminant ID of "bacteriological" is found
- if no CSF record is found, create one with

  CSF-SDF-RSPD-END = PWF-PLANT-BEGIN-DATE
- determine the most recent processable compliance period dates for this PWS (PWS-CPD, see appendix A.4)
- compare PWS-CPD end date with CSF-SDF-RSPD-END
- if the dates are equal, the PWS has already been edited for compliance for this CPD, and an appropriate message is written to the Warning Report. Processing is bypassed for this PWS and the PSF samples for the PWS are copied to the remaining PSF for later use. This is accomplished by setting a PWS-NO-PROC switch.
- determine if the PWS is eligible for special processing under section 141.14 (c) of the regulations:
  - if PWS compliance type is "monthly" and Total Samples (Fed value only) is less than or equal to RGF-BACT-REQMNTS-MAX-SAMPLES

(Fed value only) and PWF-STATE-MONTHLY-MONITORING is equal to "N" and RGF-BACT-REQMNTS-SAMPLE-PERIOD (Fed value only) is greater than 1 month, the PWS is marked for special processing by setting PWS-M-SPECIAL switch to 1. PWS's in the category "monthly special" are monitored on a monthly basis for regular sampling violations, but the compliance period for all other

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processing is regulated by the number of months (n) specified in RSP-BACT-REQMNTS-SAMPLE-PERIOD, which is nominally set at 3 months although this is not the same as a regularly scheduled "quarter". These PWS's are processed for compliance every n months, however, a special table is kept of regular sample counts by month for regular sample violation processing.

- position the SAF for the insertion of new summary records generated during the compliance edit by copying records from the input SAF to the new SAF until a record is found with PWS ID greater than the one being edited or with the same PWS ID but for a contaminant ID greater than "bacteriological" (3000)
- initialize counters and computational items for the following:

Analysis result data: (one set for each analysis method)	Maximum AR Minimum AR AR Total (used to compute Mean AR)
Sample counters: (one set for each analysis method)	Regular summary samples Regular detail samples Check samples Consecutive daily check samples Consecutive negative check samples
Violation counters: (2 sets for each analysis method,	Single sample MCL violations Monthly average MCL violations Regular sampling violations

one Fed & one State) Check sampling violations

. process all samples from the PSF with matching PWS ID and contaminant ID of "bacteriological" according to the following logic.

Process PSF Records:

(1) . Read PSF record, if there are no more PSF records for this PWS, exit to (5) to process violations for this PWS.

(2) . Examine sample type and sample date

. If sample type is "P", "R", or "S" or if sample date is before compliance period (CPD) start date, transfer sample to new SAF. If sample date is before CPD start date write a warning message on the Warning Report.

. if sample date is later than CPD end date, transfer sample to remaining PSF for later processing

. At this point, remaining samples are type "C" or "D" and within CPD.

. Check for "Dummy" sample. Dummy samples are used to maintain continuity whenever a compliance period ends and check samples are still expected. They are maintained by the compliance program and are invisible to the user.

. if the sample is not a "Dummy", it is a regular (type "D") or check (type "C") sample. Process as follows:

. Sample type = "D" (regular sample)

Check record type:

. Summary record:

. add 1 to summary sample counter

. add # samples to regular detail sample counter

- add (mean analysis result (AR) * # samples) to AR total
- set AR min = min (AR min, sample AR min)
- set AR max = max (AR max, sample AR max)
- add # federal and state violations to internal violations counters
- return to (1) to get next sample

- Detail record:
  - if this is the first regular sample after termination of chlorine residual substitution, check to see if it was taken within the required time period. If not write a warning message. In any case:
  - add 1 to regular sample counters
  - if this is a "monthly special" PWS, add 1 to the regular sample counter for this analysis method for the appropriate month of the CPD
  - add AR to the AR total
  - set AR min = min (AR min, sample AR min)
  - set AR max = max (AR max, sample AR max)
  - if this sample is chlorine residual and is earlier than previous chlorine samples, save it relative day # as the new starting point for chlorine residual substitutions.
  - if this is a "monthly special" PWS, increment the appropriate monthly sample count

. Examine analysis result for Federal and State compliance (2 passes thru this logic)

. Compare AR with MCL (Fed/State):

. AR $\leq$ MCL (Fed/State) (AR $\geq$ MCL for chlorine)

. exit to (3)

. AR $>$ MCL (Fed/State) (AR $<$ MCL for chlorine)

. add 1 to single MCL violation counter (Fed/State) (indicates possible single MCL violation, not yet confirmed)

. set flag to indicate that check samples are expected for this PWS

. check SIC

. SIC = blank

. violation confirmed since there is no way to tie check sample to regular sample

. turn off "expecting check sample" flag

. add 1 to check sample violation counters (Fed/State)

. SIC = non-blank

. exit to (3) (check sample with same SIC is expected)

(3) . when both Fed and State passes are completed, return to (1) to get next sample

. Sample type = "C" (check sample)

Check samples are only processed if expected, otherwise, they are treated as extras and ignored. The previous regular or check sample has been saved for comparison.

- compare SIC and analysis method (AM) with previous sample:
- different SIC or AM:
  - end of check samples
  - if still expecting check samples, increment appropriate check sample violation counter (Fed/State)
- same SIC and AM
  - check analysis method:
  - AM = chlorine
    - check if taken within retest time limit:
    - not within time limit
      - increment check sample violation counter (but use check sample anyway)
    - examine analysis result (2 passes: 1 Fed and 1 State):
    - AR $\geq$ MCL (Fed/State)
      - no MCL violation - decrement single MCL violation counter
      - exit to (4)
    - AR $<$ MCL (Fed/State)

- MCL violation confirmed
- set last chlorine residual sample date = date of this sample
- set flag to indicate expecting non-chlorine retest

(4) - when both Fed and State passes are completed, exit to (1) to get next sample
- AM = membrane filter or fermentation tube

- compare sample date with previous sample date:
- same day:
  - increment consecutive daily check sample counter
- Sample taken on next day after previous sample
  - examine consecutive daily check sample counter
  - counter ≥ required number of daily check samples
    - no action
  - counter < required number
    - increment appropriate check sample violation counters

- reset consecutive daily check sample counter to 1

- more than 1 day elapsed between this sample and the last
  - process same as next day sample processing above
  - set consecutive negative count to zero

- examine analysis result for all non-chlorine check samples

- AR < 1
  - increment # consec negatives

- AR ≥ 1
  - no action

- check # consec negatives

- required #
  - no action

- required #
  - no MCL violation
  - decrement single MCL violation counter
  - turn off "expecting check" switch

- exit to (1) to get next sample

(5) Process_Violations:

After all samples have been read for this PWS, the extracted data are examined for MCL and sampling violations. Violation processing may be performed for Federal violations, State violations, or both depending on the setting of PWP-STATE-REGULATE-BY (F, S, or B).

Processs_regular_sampling_violations:

(For "monthly special" PWS's this processing is done on a month by month basis, using the special table of counters discussed on the first page of this appendix.)

- determine the total number of regular non-chlorine samples taken:

  Total regular samples = Regular detail sample counter (membrane filter method) + Regular detail sample counter (fermentation tube 10ml) + Regular sample counter (fermentation tube 100ml)

- compare this total with Regular Samples (Fed/State) as determined in appendix C.4
- if Total regular samples is less than Regular Samples (Fed/State), assign a Federal or State regular sampling violation
- if Total regular samples is greater than or equal to Regular Samples (Fed/State), check for any chlorine residual substitutions as follows (note that the following checks do not apply to the "monthly special" PWS's, as such PWS's are small, non-community PWS's

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whose sampling requirements are very small. This, together with the requirement of one chlorine sample per day minimum, makes it very unlikely that a "monthly special" PWS would consider the chlorine residual substitution method, therefore, the program is not designed to consider chlorine residual substitution in the case of "monthly special" PWS's).

- examine the allowed chlorine residual substitutions determined in appendix C.4
- if chlorine residual substitutions were allowed, examine the table of stored daily chlorine counts to see if at least one chlorine sample was taken each day during the time chlorine residual sampling was being done
- if a day was missed, assign a regular sampling violation
- if at least one sample was taken per day, compute the number of regular samples for which they can be substituted:

  Substitutions = Chlorine Samples Taken /
  RGP-BACT-CHL-SAMPLES-IN-LIEU (Fed/State)

- determine if regular samples plus substitutions satisfies the sampling requirements:

  Samples Taken = Total Regular Samples + Substitutions

- if Samples Taken is less than Total Samples (Fed/State) (computed in appendix C.4) assign a regular sampling violation

Determine Check Sampling Violations:

Check sampling violation information is accumulated during the processing of PSF samples, by incrementing counters (one Fed, one State) whenever a check sample is expected and decrementing the counters when the expected check sample is found.

- if Federal or State check sample violation counter is greater than zero, an expected check sample was not found, issue an appropriate check sampling violation.

Determine Single Sample MCL Violations:

Single sample violation information is also accumulated during the processing of PSF samples. Whenever a summary record is processed, the sample violation counters in the sample record are added to the internal violation counters. In addition, the analysis result for each detail sample is checked against the single sample MCL. If the MCL is exceeded, however, this does not constitute a single sample MCL violation. If the required number of consecutive negative check samples is received, the violation counter is decremented since the possible violation is not confirmed. After the samples have been processed, the violation counter represents only those violations which were confirmed by the followup check samples.

(Note that this check is not made for chlorine residual samples since they are substitutes for other methods, and if the chlorine level falls below the "MCL", resampling by another method is required.) Using the counters of confirmed violations of Federal or State MCL, there are two ways in which a single sample MCL

violation may be generated, depending on analysis method and required number of samples. For each analysis method, a "minimum for percent" is specified:

for membrane filter: Percent (Fed/State) RGP-BACT-MF-MINREQD-SAMPLES (Fed/State)

for fermentation tube: Percent (Fed/State) RGP-BACT-FT-MIN-REQD-SAMPLES (Fed/State) or

Percent (Fed/State) RGP-BACT-FH-MIN-REQD-SAMPLES (Fed/State), depending on sample size used

- if Total regular samples (for this analysis method) is less than Percent (Fed/State, for this analysis method):
  - if Single sample MCL violation counter (Fed/State) is greater than 1, assign a single sample MCL violation
- if Total regular samples (for this analysis method) is greater than Percent (Fed/State, for this analysis method)
  - if Single sample MCL violation counter (Fed/State) is greater than Percent (Fed/State) * Total regular samples, assign a single sample MCL violation.

Determine Monthly Average MCL Violations:

Monthly average MCL's for the various analysis methods are:

- for Membrane Filter method: RGP-BACT-MF-MONTHLY-MCL
- for Fermentation Tube: RGP-BACT-FT-MONTHLY-MCL or RGP-BACT-FM-MONTHLY-MCL, depending on sample size used
- compute the average of the analysis results for each analysis method for which samples were submitted:

  Average = AR Total / Total samples
- compare Average with Monthly Average MCL for this analysis method:
- if Average is greater than Monthly Average MCL (Fed/State), assign an appropriate monthly average MCL violation.

Appendix F.4 Building of the Violation Records

1. The following fields are utilized in building the VIF-M-REPT-RECORD along with their sources.

From the Internally stored Public Water File Record

VIF-M-PWS-ID

VIF-M-PWS-NAME

VIF-M-PWS-TYPE

VIF-M-POPULATION

VIF-M-SOURCE-CODE

VIF-M-REGION

VIF-M-DISTRICT

From the Internal Compliance Tables

VIF-M-MCL-VIOLATED

VIF-M-MCL-VIOL-DECIMALS

Internally Generated

VIF-M-REGULATION-LEVEL

VIF-M-VIOLATION-TYPE

VIF-M-VIOLATION-DATE

VIF-M-LAB-ID

VIF-M-SAMPLE-DATE

VIF-M-ANALYSIS-METHOD

VIF-M-ANALYSIS-RESULT

VIF-M-ANALYSIS-DECIMALS

VIF-M-ANALYSIS-DATE

VIF-M-SAMPLE-TYPE

Lab Table

VIF-M-LAB-NAME

VIP-M-CONTAMINANT-ID

2. The following fields are utilized on building the VIP-S-REPT-RECORDS along with their sources.

From the Internally stored Public Water File Record

VIP-S-PWS-ID

VIP-S-PWS-NAME

VIP-S-PWS-TYPE

VIP-S-PWS-POPULATION

VIP-S-PWS-SOURCE-CODE

VIP-S-REGION

VIP-S-DISTRICT

From the Internal Compliance Table

VIP-S-SAMPLES-NUM-REQUIRED

Internally Generated

VIP-S-REGULATION-LEVEL

VIP-S-VIOLATION-TYPE

VIP-S-VIOLATION-DATE

VIP-S-VIOLATION-DURATION

VIP-S-SAMPLES-NUM-TAKEN

VIP-S-SAMPLES-CUTOFF-DATE

VIP-S-CONTAMINANT-ID

3. The following fields are used in building the VIF Update Transaction File.

For VIF-TR00-UPDT-RECORD

VIF-TR00-VIOLATION-ID = blanks

VIF-TR00-TRANSACTION-CODE = "00"

VIF-TR00-CREATE-DELETE-FLAG = "Y"

For VIF-TR01-UPDT-RECORD

Use corresponding fields from VIF-M-REPT-RECORD for MCL violations or VIF-S-REPT-RECORD for sampling violations

and VIF-TR01-VIOLATION-ID = blanks

VIF-TR01-TRANSACTION CODE = "01"

For VIF-TR02-UPDT-RECORD

Use corresponding fields from VIF-M-REPT-RECORD for MCL Violations or VIF-S-REPT-RECORD for sampling violations and VIF-TR02-VIOLATION-ID = blanks.

VIF-TR02-TRANSACTION-CODE = "02"

Appendix G.4

Processing of PWS's not scheduled for compliance edits:

PWS's whose compliance type is "Monthly" (see appendix B) but whose compliance cycle does not match that requested in the processing options are not edited for compliance; however, they are checked to determine if processing was skipped for a previous compliance period as follows:

- determine CPD dates for the compliance cycle requested on the processing options (CC-CPD, see appendix A.4)
- read the Compliance Status File (CSF) until a record is found with matching PWS-ID and contaminant ID of "bacteriological".
- if no CSF record was found, create one with

  CSF-SDF-RSPD-END = PWF-PLANT-BEGIN-DATE
- determine the most recent processable CPD dates for this PWS (PWS-CPD, see appendix A.4)
- compare PWS-CPD end date with CSF-SDF-RSPD-END from the CSF and with the CC-CPD end date
- if CSF-SDF-RESPD-END PWS-CPD end date CC-CPD end date a compliance period was skipped for this PWS, and an appropriate message is written to the Warning Report.

In additon, if any samples are found on the PSF with sample date older than the beginning of the PWS-CPD, they are too old to process for compliance, and they are transferred to the SAF with an appropriate warning message.

Appendix A.5
Compliance Overview for GROSS ALPHA

Use Sections:
- Build Internal Regulations Tables
- Process PWF
- Process CSF
- Process SAF
- Process PSF
- Process Violations
- Process PWS Break

Appendix C.5

- Build_Internal_Regulations_Tables

    - READ RGF
    - Check if RGF endfile:
    - RGF-EDF on
        - Close RGF
        - EXIT to 'PROCESS PWF'
    - RGF-EDF off
        - Check the Contaminant ID of the RGF record:
            - Contaminant ID = 4000
                - Check the Regulation Level of the RGF record
                    - Regulation Level = FS or FP
                        - Store in Federal Internal Regulations Table
                        - Return to 'READ RGF'
                        - Regulation Level=SS or SP
                        - Store in State Internal Regulations Table
                        - Close RGF
                        - Exit to 'PROCESS PWF'
            - Contaminant ID ≠ 4000
                - Return to 'READ RGF'

Appendix B.5

- Process PWF

    - Check for PWF Endfile
        - PWF-EOF - on
            - EXIT to 'PROCESS CSF'
        - PWF-EOF - off
            - Check if PWS is "excluded"
            - PWS is "excluded"
                - Turn on PWS-EXCL switch
                - EXIT to 'PROCESS SAF'
            - PWS is not "excluded"
                - Turn off PWS-EXCL switch
                    * Build Internal Compliance Tables (ICT's)
                - EXIT to 'PROCESS CSF'

Note: Reference *READ PWF

Appendix C.5

```
- PROCESS_CSF

   -   Check for CSF Endfile
   -   CSF-EOF on
       -   Check for PWF endfile
       -   PWF-EOF on
           -   EXIT to 'PROCESS SAF'
       -   PWF-EOF off
         - Check if PWS is "excluded"
           -   PWS is "excluded"
               -   Do not build CSF records
               -   EXIT to 'PROCESS SAF'
           -   PWS
       (-  PWS is not "excluded")
               -   Build new CSF records in stored CSF areas
                     using PWS-ID, cont-ID is 4100, 4101, 4171
                     and 4249
               *   PROCESS VE DATA
               *   INITIALIZE CSF SAMPLING DATES
               -   EXIT to 'PROCESS SAF'
   -   CSF-EOF off
       -   Store CSF record
       -   Check CSF PWS-ID against stored PWS-ID
       -   CSF PWS-ID = stored PWS-ID
           -   Check if PWS is "excluded"
           -   PWS is "excluded"
               -   EXIT to 'PROCESS SAF'
           -   PWS not "excluded"
               -   Check first two digits of CSF cont-ID
                     against '40'
               -   CSF first two digits < '40'
                   -   Copy stored CSF record to new CSF
                   -   READ CSF
                   -   RETURN TO 'PROCESS CSF'
               -   CSF first two digits = '40'
                       -   Check CSF Cont-ID against '4000' and
                             '4010'
                       -   CSF Cont-ID = '4000'
                           -   Move stored CSF record to CSF-4000
                               area
                           -   Turn CSF-4000-switch on
                           -   READ CSF
                           -   RETURN TO 'PROCESS CSF'
                       -   CSF-cont
                     (-  CSF cont-ID = '4010')
                           -   Check CSF-4000-SWITCH
                           -   CSF-4000-SWITCH off
                           -   missing CSF record for cont-
                                 ID =4000
                           -   Build new CSF record in CSF-
                                 4000 area using stored PWS-ID
                                 and cont-ID='4000'
                           *     PROCESS VE DATA
```

```
                    *   INITIALIZE CSF
                          SAMPLING DATES
                    -   Exit to 'PROCESS SAF'
                -   CSF-4000-SWITCH on
                    -   Turn CSF-4000-switch off
                    *   PROCESS VE DATA
                    *   INITIALIZE CSF SAMPLING
                          DATES
                    -   Exit to 'PROCESS SAF'
            -   CSF cont-ID≠'4000' or '4010'
                    -   Check CSF cont-ID
                    -   CSF cont-ID 4010
                    -   Copy stored CSF record
                          to new CSF
                    -   Read CSF
                    -   Return to 'PROCESS CSF'
                -   CSF cont-ID > 4010
                    -   Missing CSF record for
                          cont-ID=4010
                    -   Move stored CSF record to
                          saved CSF area
                    -   Build new CSF record in stored
                          CSF area using stored PWS-ID
                          and cont-ID='4010'
                    -   Turn on CREATE CSF switch
                    -   Check CSF-4000-switch
                    -   CSF-4000-switch off
                    -   Missing CSF-record for cont-ID
                          =4000
                    -   Build new CSF record in CSF-4000
                          area using stored PWS-ID and
                          (cont-ID=4000)
                    *   PROCESS VE DATA
                    *   INITIALIZE CSF SAMPLING DATES
                    -   Exit to 'Process SAF'
                    -   CSF-4000-switch on
                    -   Turn CSF-4000-switch off
                    *   PROCESS VE DATA
                    *   INITIALIZE CSF SAMPLING DATES
                    -   EXIT to 'PROCESS SAF'
-   CSF PWS-ID < stored PWS-ID
    -   Move stored CSF record to saved CSF area
    -   Do not build new CSF records - blank out stored CSF
          records
    -   Turn on CREATE-CSF switch
    -   Turn on CSF-PWS-BRK switch
    -   EXIT to 'PROCESS SAF'
-   CSF PWS-ID > stored PWS-ID
    -   Missing CSF record for cont-ID = 4010
    -   Move stored CSF record to saved CSF area
    -   Build new CSF record in stored CSF area using PWS-ID
          and cont-ID = 4010
    -   Turn on CREATE CSF switch
    -   Check CSF-4000 switch
    -   CSF-4000 switch off
```

Appendix C.5

```
        -   Missing CSF-record for cont-ID = 4000
        -   Build new CSF record in CSF-4000 area using
              PWS-ID and cont-ID = 4000
        *   PROCESS VE DATA
        *   INITIALIZE CSF SAMPLING DATES
        -   EXIT to 'PROCESS SAF'
    -   CSF-4000-switch on
        -   Turn CSF-4000 switch off
        *   PROCESS VE DATA
        *   INITIALIZE CSF SAMPLING DATES
        -   Exit to 'PROCESS SAF'
```

Appendix D.5

PROCESS SAF

```
- Check for SAF endfile
- SAF-EOF on
   -  EXIT to 'PROCESS PSF'
- SAF-EOF off
   -  Check for PWF endfile
   -  PWF-EOF on
      -  Copy SAF sample to new SAF
      -  Produce Warning "SAF sample record PWS-ID not on
           PWF" in the Warnings Report
      -  READ SAF
      -  Return to 'PROCESS SAF'
   -  PWF-EOF off
      -  Check SAF PWS-ID against stored PWS-ID
      -  PWS-ID match
         -  Copy Sample to new SAF
         -  Read SAF
         -  Return to 'PROCESS SAF'
      -  SAF PWS-ID < stored PWS-ID
         -  PWS on file not on PWF
         -  Produce Warning "SAF Sample record PWS-ID
              not on PWF" in the Warnings Report
         -  Copy Sample to new SAF
         -  Read SAF
         -  Return to 'PROCESS SAF'
      -  SAF PWS-ID > stored PWS-ID
         -  Turn on SAF-PWS-BREAK switch
         -  Exit to 'PROCESS DSF'
```

Appendix D.5

PROCESS_PSF

```
- Check for PSF endfile
- PSF-EOF - on
   -  EXIT to 'PROCESS VIOLATIONS'
- PSF-EOF - off
   -  If cont-ID not equal to 4000 or 4010,
      -  Read PSF
      -  EXIT to 'PROCESS-PSF'
   -  Check for PWF endfile
   -  PWF-EOF - on
      -  Assign new SAF sample key (date only)
      -  Set SSC to 44
      -  Copy PSF sample record to new SAF
      -  Produce warning "PSF sample record PWD-ID not on
         PWF" in the Warnings Report
      -  Read PSF
      -  Return to 'PROCESS PSF'
   -  PWF-EOF - off
      -  Check PSF PWS-ID against stored PWS-ID
      -  PWS-ID match
         -  Check if PWS is "excluded"
         -  PWS-EXCL switch - on
            -  PWS "excluded" from sampling
            -  Assign new SAF sample key (date only)
            -  Set SSC to 99
            -  Copy sample to new SAF
            -  Read PSF
            -  Return to 'PROCESS PSF'
         -  PWS-EXCL switch - off
            -  PWS not "excluded" from sampling
            *  Store PSF record
            -  Read PSF
            -  Return to 'PROCESS PSF'
      -  PSF PWS-ID < stored PWS-ID
         -  PWS on file not on PWF
         -  Produce warning "PSF sample record PWS-ID not
            on PWF" in the Warnings Report
         -  Assign new SAF Sample Key (date only)
         -  Set SSC to 44
         -  Copy PSF sample to new SAF
         -  Read PSF
         -  Return to 'PROCESS PSF'
      -  PSF PWS-ID > stored PWS-ID
         -  EXIT to 'PROCESS VIOLATIONS'
```

Appendix E.5

PROCESS_VIOLATIONS

- Violations Processing is done in several sections with MCL Violations first, followed by Sampling Violations
- For those PWS's that are "excluded", the Violations Processing sections are skipped
- Conditions are checked to determine whether Violations Processing sections are to executed only once (Federal and State conditions are identical) or twice (Federal and State conditions different)
- Check if PWS is "state" only (PWF field "REGULATED-BY")
- PWS is "state" only
  - Set violation-flag to "1"
  * PROCESS VIOLATIONS - only state violations are identified
  - EXIT to 'PROCESS PWS BREAK'
- PWS is not "state" only
  - Scan Fed and State ICT's (every element) and VE Arrays
  - Every element matches in ICT's and VE Arrays
    - Set violation-flag to "3"
    * PROCESS VIOLATIONS-State or Fed - any Federal Violations are automatically State Violations
    - EXIT to 'PROCESS PWS BREAK"
  - Every element does not match in ICT's and VE Arrays
    - Set violation-flag to "1"
    * PROCESS VIOLATIONS - State Only
    - Set violation-flag to "2"
    * PROCESS VIOLATIONS - Federal Only
    - EXIT to 'PROCESS PWS BREAK'

Appendix B.5

PROCESS PWS BREAK

- Check for PWF endfile
- PWF-EOF on
  - EXIT from program - terminate processing
- PWF-EOF off
  - Process the CPA
    - Copy those CPA record flagged as such to the new SAF
    - Copy remaining CPA records to the new PSF
  - Copy stored CSF records to new CSF
  - Check the CREATE-CSF switch
    - CREATE-CSF switch off
      - READ CSF
    - CREATE-CSF switch on
      - Copy Saved CSF record to stored CSF record.
      - Turn off CREATE-CSF switch.
  - Check CSF-PWS-BREAK, SAF-PWS-BREAK and PSF-PWS-BREAK switches
    - All (3) switches on
      - Set all (3) switches off
      - Read PWF
      - Return to 'PROCESS PWF'
    - Any switches - off
      - Return to 'PROCESS CSF'

Appendix B.5

* READ_PWF

a. The PWF is the master file for processing all the PWS's.

b. Determine if a PWS is "excluded" from compliance processing due to one of the following:

(I) Non-community PWS(PWF-PLANT-TYPE) and only community monitoring required state wide (REGS).

(II) Inactive PWS (PWF-PLANT-ACTIVITY).

(III) Consecutive PWS, not monitoring (PWF-PLANT-CONSEC-INDICATOR)

(IV) PWS Regulated by neither Federal or State Requaltions (PWF-STATE-REGULATE-BY)

(V) PWS begin date (PWF-PLANT-BEGIN-DATE) greater than the current date.

(VI) PWS not monitored for radioactivity (PWF-STATE-RADIOACTIVE-FLAG).

c. If the PWS does not meet any of the above criteria:

(I) Store the PWF record for later use in modifying the Internal Compliance Tables (ICT's)

(II) The entire remaining portion of the logic is performed for each PWS.

d. If the PWS meets any of the above criteria, turn on the PWS-EXCL switch and EXIT to 'READ SAF RECORD'.

Appendix C.5

* BUILD INTERNAL COMPLIANCE TABLES

- Build Federal ICT
- Copy the following fields from the Federal IRT to the Federal ICT.
  - Effective Date
  - Gross Alpha MCL (XMCL)
  - Combined Radium MCL (RMCL)
  - Gross Alpha Screening Level Without Radium 228 (XSL)
  - Radium 226 Screening Level for Radium 228 (RSLR)
  - Radium 226 Screening Level for Annual Monitoring (RSLA)
  - Required Samples Per Year (Reqd-num-spls)
  - Normal Monitoring Frequency (mon-period) (convert to months)
  - Fraction for Single Sample Substitution (single-frac)
  - Violation Frequency (viol-freq)
  - Community flag (Community-flag)
- Build State ICT's
- Copy the same fields from the State IRT to the State ICT
  - Effective Date
  - XMCL
  - RMCL
  - XSL
  - RSLR
  - RSLA
  - Reqd-num-spls
  - mon-period (convert to months)
  - Single-frac
  - Viol-freq
  - Community-flag
- Modify ICT's from the PWF
- Scan the stored PWF record for the following conditions:
  - Examine PWF-STATE-RADIOACTIVE-FLAG
  - PWF-STATE-RADIOACTIVE-FLAG='1' or '4'
    - No action
  - PWF-STATE-RADIOACTIVE-FLAG='2' or '5'
    - Fed XSL=Gross Alpha Screening Level <u>with</u> Radium 228 from Fed IRT
    - State XSL=Gross Alpha Screening Level <u>with</u> Radium 228 from State IRT
  - Examine PWF-STATE-RADIOACTIVE-MONITOR
  - PWF-STATE-RADIOACTIVE-MONITOR='1' or '2'
    - Set Fed and State Reqd-num-spls=1
  - PWF-STATE-RADIOACTIVE-MONITOR='3' or '4'
    - No action
  - Examine PWF-STATE-MONITOR-GROSS-ALPHA
  - PWF-STATE-MONITOR-GROSS-ALPHA=0
    - No action
  - PWF-STATE-MONITOR-GROSS-ALPHA > 0
    - Set Fed and State Mon-period=PWF-STATE-MONITOR-GROSS-ALPHA
  - Examine PWF-STATE-NUM-SAMPLES-PER-YR
  - PWF-STATE-NUM-SAMPLES-PER-YR=0
    - No action

Appendix C.5

```
-- PWP-STATE-NUM-SAMPLES-PER-YR > 0
-   Set Fed and State Reqd-Num-spls=PWP-STATE-
      NUM-SAMPLES-PER-YR
```

Note: Whenever the values in these fields are referenced in the logic, they may be called "check fields" to indicate that they are Regulation values. Those MCL and non-freq. values changed by V&E are to be loaded in a later section of the logic.

* PROCESS VE DATA

- STORE PWP VE DATA
- Check the PWP V&E Data Fields
- All PWP V&E Data Fields = ∅
  - Turn off PWP-VE-DATA switch
  - EXIT to 'PROCESS CSP VE DATA'
- One or more PWP V&E DATA fields non-blank with Cont-ID =4000 and/or 4010
  - Turn on PWP-VE-DATA switch
  - Move data from non-blank PWP V&E Data Fields to the PWP VE ARRAY
  - Exit to 'PROCESS CSP VE DATA'
- PROCESS CSP VE DATA
  - Check the CSP VE Data Fields in both Stored Records
  - All CSP VE Data Fields = ∅
    - Turn off the CSP-VE-DATA switch
    - EXIT to 'PROCESS PWP VE DATA'
    - Any of the CSP VE Data fields are non blank.
    - Store the data from non-blank CSP VE Data fields in the CSP VE ARRAY
    - EXIT to 'PROCESS CSP VE ARRAY'
- PROCESS CSP VE ARRAY
  - Process of each entry in the CSP VE ARRAY
  - Check the END DATE of the record
  - END DATE = ∅
    - V&E may still be in effect
    - Check PWP-VE-DATA Switch
    - PWP-VE-DATA switch off
      - V&E no longer in effect
      - Enter Current Date as END DATE in the CSP VE ARRAY record
      - Return to 'PROCESS CSP VE ARRAY'
    - PWP-VE_DATA switch on
      - Check PWP VE ARRAY for a match on MCL (MOD-MCL) and Sampling Period (ALT-SPLG) and CONT-ID
      - No match on MOD-MCL & ALT-SPLG and CONT-ID in PWP VE ARRAY
        - V&E no longer in effect
        - Enter Current Date as END-DATE in the CSP-VE-ARRAY record
        - Return to 'PROCESS CSP VE ARRAY'
      - Match on MOD-MCL & ALT-SPLG and CONT-ID in PWP VE ARRAY
        - V&E still in effect
        - flag PWP VE ARRAY record as "processed" turn on 'PWP-PROC' flag
        - Return to 'PROCESS CSP VE ARRAY'

```
        -   END DATE OF CSF VE ARRAY record non-blank
            -   V&E no longer in effect
            -   Enter Current Date as END-DATE in the
                  CSF-VE-ARRAY record
            -   Return to 'PROCESS CSF VE ARRAY'
    -   PROCESS PWF VE DATA
        -   Check the PWF-VE-DATA switch
        -   PWF-VE-DATA switch off
            -   No PWF VE Data for Gross Alpha
            -   EXIT to 'RESORE CSF VE DATA'
        -   PWF-VE-DATA switch on
            -   Process PWF-VE-ARRAY
            -   Check 'PWF-PROC' flag in PWF VE ARRAY record
            -   'PWF-PROC' flag on
                -   PWF VE ARRAY record already processed
                -   Return to 'PROCESS PWF VE ARRAY'
            -   'PWF-PROC' flag off
                -   Turn on CSF-VE-DATA switch
                -   Copy PWF VE ARRAY data to CSF VE ARRAY
                -   Enter current date as START DATE in
                      CSF VE ARRAY record
                -   Return to 'PROCESS PWF VE ARRAY'
    -   RESTORE CSF VE DATA
        -   Check the CSF-VE-DATA switch
        -   CSF-VE-DATA switch off
            -   No V&E Data to process
            -   EXIT to *MODIFY ICT
        -   CSF-VE-DATA switch on
            -   Copy the last four (4) CSF VE ARAY records
                  for Cont-ID 4000 and 4010 to the CSF VE Data
                  fields in the appropriate CSF record
            -   EXIT to *Modify ICT
    *   MODIFY ICT
```

Appendix C.5

* MODIFY INTERNAL COMPLIANCE TABLES (ICT)

- Check the CSF-VE-DATA switch
- CSP-VE-DATA switch off
  - No V&E Data to process
  - EXIT *INITIALIZE CSP SAMPLING DATES'
- CSF-VE-DATA switch on
  - Process for each set of CSP-VE-DATA
  - Check MOD-MCL field = blanks
    - Possible exemption
    - Copy dates from CSF-VE array to ICT-VE-Dates
    - Check ALT-SPLG for blanks
      - If blank-PWS is exempt
      - Move zeros to MCL & SPLG fields in ICT-VE DATA
      - Move 1 to PWS-EXEMPT-SW
    - If not blanks - VE for sampling only
      - Move zeros to MCL in ICT-VE
      - Move ALT-SPLG to ICT-VE
  - If MOD-MCL field not blank
    - Check the MOD-MCL field agianst the Fed MCL check field (MCL or RMCL)
      - MOD-MCL > or = Fed-MCL check field
        - MCL V&E for both Fed & State
        - Copy MOD-MCL value and dates to FED MCL VE ARRAY and STATE MCL VE ARRAY
        - Check ALT-SPLG field
        - ALT-SPLG field = blanks
        - No further action
      - Return to *MODIFY ICT
      - ALT-SPLG field not = blanks SPLG V&E value for Fed & State
        - Copy ALT-SPLG value and dates to FED-SPLG-VE-ARRAY and STATE SPLG-VE-ARRAY
        - Return to *MODIFY ICTT
    - MOD-MCL < Fed MCL Check field MCL V&E for State only
    - Copy MOD-MCL value and dates to STATE MCL VE ARRAY only
    - Check ALT-SPLG field
      - ALT-SPLG field = blanks
      - No further action
      - Return to *MODIFY ICT
      - ALT-SPLG field not = blank
      - SPLG V&E for State only
      - Copy ALT-SPLG value and dates to STATE-SPLG-VE-ARRAY only
      - Return to *MODIFY ICT

Appendix C.5

* INITIALIZE_CSF_SAMPLING_DATES:

- FEDERAL:
  - Check if the Fed RSPD's are blank-
  - FED RSPD's = ∅
    - Check if record in Fed SPLG VE ARRAY:
      - Record in Fed SPLG VE ARRAY:
        - Use the Start Date from the Fed SPLG VE ARRAY record, giving the FED RSPD Start Date
        - Add the length from the Fed SPLG VE ARRAY record minus 1 to the Start Date from the Fed SPLG VE ARRAY record, giving the Fed RSPD End Date
      - No record in Fed SPLG VE ARRAY:
        - Use the Effective Date Check Field of the Fed Regs, giving the Fed RSPD Start Date
        - Add the 3 year initial sample period length to the Fed Effective Date Check Field minus 1, giving the Fed RSPD End Date
    - Copy the Fed RSPD's to the Stored CSF record
  - Fed RSPD's = non ∅
    - No action taken here
- STATE
  - Check if the STate RSPD's are blank -
  - State RSPD's = ∅
    - Check if record in State SPLG VE ARRAY:
      - Record in State SPLG VE ARRAY:
        - Use the Start Date from the State SPLG VE ARRAY record, giving the State RSPD Start Date
        - Add the length from the State SPLG VE ARRAY record minus 1 to Start Date giving the State RSPD End Date.
      - No record in State SPLG VE ARRAY:
        - Use the Effective Date Check Field of the State Regs, giving the State RSPD Start Date.
        - Add the 3 year initial sample period length to the State Effective Date Check Field minus 1, giving the State RSPD End Date
    - Copy the State RSPD's to the Stored CSF record
  - State RSPD's = non-∅
    - No action taken here

Appendix D.5

* STORE_PSF_RECORD

- The PSF records are stored by sample groups - samples with the same contaminant ID and PWS-ID and with the same sample ID (SIC) or Sample Dates
- Check PWF-EXEMPT-SW for exemption (=11)
  - This contaminant is under a sampling EXEMPTION and no samples required
  - Set Fed & State VFC's to "B"
  - Set SSC to "55"
  - Assign new SAF Sample Key (date only)
  - Copy PSF record to new SAF
  - EXIT
- PWF-EXEMPT-SW-OFF
  - Process PSF record based on Sample Type and Sample Date
  - Sample Type not = 'D'
    - Special Sample
    - Set SSC = "44"
    - Set Fed and State UFC's to "B"
    - Assign new SAF Sample Key (date only)
    - Copy PSF record to new SAF
    - EXIT
  - Sample Type = "D"
    - Regular Sample
    - Check Current Date against RSPD Start Date
    - Current Date ≤ RSPD Start Date + Lag
      - Turn on EARLY-FLAG
      - Check Sample Date
      - Sample Date within mon-freq (from state ICT) and lag period prior to current date
        - Store PSF sample in CPA
        - EXIT
      - Sample Date earlier than mon-freq (from State ICT) and lag period prior to current date
        - Sample too old to process
        - Produce warning "PSF Sample Received Date XX/XX/XX - too old to process -- copied to SAF as an extra sample" in the Warnings Report
        - Set both UFC's to B
        - Set the SSC = "44"
        - Assign new SAF Sample Key (Date Only)
        - Copy PSF record to new SAF
        - EXIT
      - Sample Date > RSPD Start Date & Lag
        - Sample not in current sampling period
        - Flag sample to be copied to the remaining PSF

Appendix D.5

- EXIT
- Current Date ≥ RSPD Start Date & Lag
  - Turn off EARLY-FLAG
  - Check Sample Date against RSPD Start Date
  - Sample Date < RSPD Start Date
    - Sample too old to process
    - Produce warning "PSF Sample Received Date XX/XX/XX - too old to process - copied to SAF as an extra sample" in the Warnings Report
    - Set both UPC's to B
    - Set the SSC = "44"
    - Assign new SAF Sample Key (Date Only)
    - Copy PSF record to new SAF
    - EXIT
  - Sample Date ≥ RSPD Start Date
    - Check Sample Date against RSPD End Date
    - Sample Date > RSPD End Date
      - Sample not in current sampling period
      - Flag sample to be copied to the remaining PSF
      - EXIT
    - Sample Date ≤ RSPD End Date
      - Store PSF sample in CPA
      - EXIT

Appendix E.5

* PROCESS VIOLATIONS - STATE OR FED

- SET UP QUARTER ARRAY
  - Set all sample flags to 0
    Set the beginning date of the first quarter in the Quarter array to the appropriate (state or fed) RSPD Start date
  - Generate the beginning dates of the 15 subsequent quarters using that first date to start
  - Look at each sample in CPA and determine which quarter it falls in (use the sample date and quarter date)
    - If sample date does not fall within the dates of the quarter array, set the SSC's (Stored Sample Code) in the CPA to '4'.
    - If sample date does fall within the quarter array
      - Set the UFC (used for compliance code) in the CPA to 'B'.
      - Check contaminant ID of the sample
        - If contaminant-ID = 4000
          This is a Regular Sample (gross Alpha)
          - Check Sample-4000 Flag in the appropriate quarter
            - If Sample-4000 Flag <u>on</u>
              regular sample already taken this quarter
            - Set SSC to '4'
            - Move on to the next CPA record
          - If Sample-4000 Flag <u>off</u>
            - Turn Sample-4000 Flag on
            - Store sample date, sample ID code (SIC) and location of sample in CPA in the quarter array
            - Set SSC to '1'
            - Move on the next CPA record
        - If contaminant ID not = 4000
          This is an additional analysis sample (cont-ID = 4010, 4020, 4030)
          - Check appropriate sample flag (Sample=4010 Flag, Sample=4020 flag, etc) in the appropriate quarter
            - If Sample flag <u>on</u>
              additional samplealready taken
            - Set SSC to '4'
            - Move on to the next CPA record
            - If sample flag is <u>off</u>
              - Check sample-4000 flag
                - If Sample-4000 flag <u>on</u>
                  - Check SIC in quarter array
                    - If SIC=blanks
                      - Check CPA Sample Date with Sample

Date of regular
samples in quarter
array
- If sample Dates match
  - Turn appropriate
    Sample flag on
  - Set SSC to '2'
  - Store location of
    sample in CPA in
    quarter array
  - Move on to next CPA
    record
  - If sample dates do
    not match
    - Set SSC to '4'
    - Move on to next
      CPA record
  - If SIC not=blanks
    - Check CPA
      SIC against SIC
      in quarter array
    - If SIC's match
      - Turn appropriate
        sample flag on
      - Set SSC to '2'
      - Store location of
        sample in CPA in
        the quarter array
      - Move on to next
        CPA record
    - If SIC's do not match
    - Set SSC to '4'
      - Move on to next
        CPA record
- If sample-4000 Flag off
  - Set SSC to '4'
  - Move on the next CPA record
- When all samples in CPA are done,
  EXIT to * PROCESS QUARTER ARRAY

Appendix E.5

* PROCESS QUARTER ARRAY

- If NOGO flag on
  - EXIT to *PROCESS MCL VIOLATIONS
- If NOGO flag off
  - Check the current date with Effective date in Regs + 3 years
    - If current date > effecte date + 3 years
      - Set INITIAL PERIOD FLAG off
    - If current date ≤ Effective date = 3 years
      - Set INITIAL PERIOD FLAG on
  - Check current date with RSPD end + lag
    - If current date > RSPD end + lag
      - Set COMPLIANCE FLAG on
    - If current date ≤ RSPD end + lag
      - Set COMPLIANCE FLAG off
      - Count the number of regular samples in the quarter array
      - If the number of regular samples < the number of samples required in ICT
        - Set NOGO flag on
        - Flag all samples in quarter array to go to PSF

Appendix E.5

* PROCESS MCL VIOLATIONS

- If NOGO flag on
  - Exit to *RESET-SSC
- If NOGO flag off
  - Scan Quarter Array sample-4000 flags looking for Reqd-num-spls of consecutive quarters with sample 4000 flags ON. Record the quarter number of the first sample 4000 flag on (Fst-qtr-ptr) and the first quarter number of the string of Reqd-num-spls consecutive quarters, if found (FST-CONSEC-PTR)
    - If Reqd-num-spls consecutive sample-4000 flag on
      - Set ALPHA-Sampling-Flag to 0
      - Set RADIUM-SAMPLING-FLAG to 0
      - Set RADIUM-228-SW to 0
      - Save location in CPA of first regular sample in consecutive quarter group and of last additional (or regular) sample in consecutive quarter group
    - If Redg-num-spls consecutive sample 4000-flags not on
      - Check compliance flag
      - If compliance flag on
        PWS is in violation of sampling requirements and MCL Compliance cannot be determined
        - Set ALPHA SAMPLING-FLAG = number of smpl-4000 flags not on between First-quarter and First-quarter + Reqd-num-spls
        - Set RADIUM-SAMPLING-FLAG=ALPHA-SAMPLING-FLAG
        - Flag all sample to be copied to the SAF
        - Set no-MCL-COMPL-FLAG
        - EXIT to *PROCESS-SAMPLING-VIOLS
    - Compliance flag off
      Not enough consecutive regular quarterly samples to run compliance
      - Flag all samples to be copied to the PSF
      - Set NOGO-FLAG on
      - Set ALPHA SAMPLING-FLAG = 0
      - Set RADIUM-SAMPLING-FLAG = 0
    - If Early-Flag is off
      - Check if there are any (quarter & lag) periods between First-quarter and the current date where a smpl-4000 flag is off
      - No smpl-4000 flags off in above period
        - Exit to *RESET SSC
      - One or more smpl-4000 flags off in
        - Produce message 'GROSS ALPHA SAMPLE MISSING FOR PWS XXXXXXX-COMPLIANCE NOT RUN' on the Warnings Report
        - EXIT to *RESET SSC

Appendix E.5

```
*  PROCESS EACH REGULAR SAMPLE (SSC=11)
   -  Process the CPA Regular Samples beginning with the
        Regular Sample with SSC=11 in the First-consec-quarter
   -  Initialize consec-counter to 0
   -  Add 1 to consec-counter
   *  Set ALPHA-MCL Check Field
      -  Determine if Regular Sample required additional
           analysis by comparing the Analysis Result to the
           XSL in the ICT
         -  Analysis Result > XSL
            -  Additional Analysis required
            -  Check the smpl-4010 flag in the Quarter
                 Array
            -  smpl-4010 flag - on
               *  SET RADIUM MCL CHECK FIELD
               -  Combined Radium Analysis Performed
               -  Add 1 to Radium Sample Counter
               -  Include Additional Analysis Result in
                    Radium-MCL-Sum
               -  Include Regular Sample Analysis Result
                    in Alpha-MCL-Sum
               -  Turn RADIUM-228-SWITCH on
               -  EXIT to *PROCESS EACH REGULAR SAMPLE
            -  smpl-4010 flag - off
               -  Combined Radium Analysis not performed
               -  Check the smpl-4020 flag in Quarter Array
               -  Smpl-4020 flag - on
                  *  SET RADIUM MCL CHECK FIELD
                  -  Radium 225 analysis performed
                  -  Add 1 to Radium Sample Counter
                  -  Include Additional Analysis Result
                       in Radium-MCL-Sum
                  -  Include Regular Sample Analysis
                       Result in Alpha-MCL-Sum
                  -  Determine if Radium 228 Analysis may be
                       required by comparing Additional
                       Analysis Result to RSLR in ICT
                     -  Additional Analysis Result > RSLR
                        -  Radium 228 Analysis may be
                             required
                        -  Check the smpl-4030 flag in
                             Quarter Array
                        -  Smpl-4030 flag - on
                           -  Radium 228 Analysis performed)
                           *SET RADIUM MCL CHECK FIELD
                           -  Add 1 to Radium-Sample-
                                counter
                           -  Include Radium 228 Analysis
                                Result in Radium-MCL-SUM
                           -  Turn RADIUM-228-SWITCH on
```

```
                                - Exit to Process each regular
                                    sample
                            - Smpl-4030 flag - off
                            - Radium 228 analysis not
                                performed yet
                            * CHECK TIME LEFT
                                - If Initial=Period-Flag on
                            - Initial-Period-Flag off
                                - Check Sample Date in
                                    Quarter Array againstt
                                    Regulations Effective Date in
                                    ICT
                            - Sample Date > Regulations
                                Effective Date + 3 years
                                - Check Ra-mon-freq in ICT
                                - Ra-mon-freq=99
                                    - Radium 228 Analysis
                                        Required
                                    * EXIT to *CHECK TIME LEFT
                                - Ra-mon-freq≠99
                                    - Radium 228 Analysis
                                        not Required
                                    - Exit to *PROCESS EACH
                                        REGULAR SAMPLE
                            - Sample Date ≤ Regulations
                                Effective Date + 3 years
                                - Radium 228 Analysis
                                    Required
                                * EXIT to *CHECK TIME LEFT
                    - Additional Analysis Result ≤ RSLR
                    - Radium 228 Analysis not required
                        - Check the smpl-4030 flag in the
                            Quarter Array
                        - Smpl-4030 flag on
                            - Radium 228 Analysis performed
                            - Include Radium 228 Analysis
                                Result in Radium-MCL-SUM
                            - Turn RADIUM-228-SWITCH on
                            - EXIT to *PROCESS EACH REGULAR SAMPLE
                        - Smpl-4030 flag off
                            - EXIT to *PROCESS EACH REGULAR SAMPLE
                - Smpl-4020 flag - off
                    - Radium 226 analysis not performed
                        * Check Time Left
- Analysis Result ≤ XSL
    - Additional Analysis not required
    - Include Regular Sample Analysis Result in
        Alpha-MCL-SUM
- Check the smpl-4010 flag in Quarter Array
    - Smpl-4010 flag on
    - Additional Analysis Performed
        - Turn RADIUM-228-SWITCH on
        - EXIT to *PROCESS EACH REGULAR SAMPLE
```

- Smpl-4010 flag off
  - Check the smpl-4030 flag in Quarter Array
  - Smpl-4030 flag - on
    - Radium 228 analysis performed
    - Turn RADIUM-228-SWITCH on
    - Exit to *PROCESS EACH REGULAR SAMPLE
  - Smpl-4030 flag - off
    - Exit to *PROCESS EACH REGULAR SAMPLE
- Finished processing Regular Sample
- Check consec-counter against Reqd-num-spls in ICT
- Consec-counter=Reqd-num-spls
  - All Regular Sample Groups processed
  - Exit to *COMPUTE ANNUAL AVERAGES
- Consec-counter ≠ Reqd-num-spls

  - More Regular Sample Groups to process
  - Return to *PROCESS EACH REGULAR SAMPLE

  - *COMPUTE ANNUAL AVERAGE
  - Check ANNUAL-AVERAGE switch
  - ANNUAL-AVERAGE switch on
    - Determine the average "annual" contaminant level of both Gross Alpha and Combined Radium
    - Set ALPHA-AVG-LEVEL=ALPHA-MCL-SUM/Reqd-num-spls
    - Check Radium Sample counter
    - Radium Sample Counter > 0
      - Set RADIUM-AVG-LEVEL=RADIUM-MCL-SUM/ Radium Sample Counter
  - Determine MCL Violations
    - Determine Gross Alpha MCL Violations
    - Check ALPHA-AVG-LEVEL against ALPHA_MCL in the ICT
    - ALPHA-AVE-LEVEL > LMCL
      - PWS is in violation of GROSS-ALPHA-MCL
      - Create MCL Violation Transaction for the VIF
      - Create VIFI Report Record (MCL)
      - Build CSPD's in stored CSF records (Cont-ID=4000)
    - ALPHA-AVG-LEVEL < LMCL
      - PWS not in violation of Gross Alpha MCL
      - Blank out CSPD's in stored CSF (Cont-ID=4000) records
  - Determine combined Radium MCL Violations
    - Determine combined Radium MCL Violations
      - Check RADIUM-AVG-LEVEL > RMCL
      - PWS is in violation of combined Radium MCL
      - Create MCL Violation Transactions for the VIF
      - Create VIFI Report Record
      - Build CSPD's in stored CSF record (Cont-ID=4010)
      - EXIT TO *CHECK LOW MCL

- RADIUM-AVG-LEVEL ≤ RMCL
- PWS not in violation of Combined Radium MCL
- Blank out CSPD's in stored CSF Record (cont-ID=4010)
- Exit to *CHECK LOW MCL

- Annual-Average switch off
  - Not enough sample results to compute average annual Combined Radium Contaminant Level
  - Check the Compliance-flag
  - Compliance flag off
    - No sampling violations-cannot determine either MCL
    - Set RADIUM-SAMPLING-FLAG=0

Flag all samples in Quarter Array to be copied to the PSF

- Exit to PROCESS SAMPLING VIOLS
- Compliance Flag on
  - Sampling Violation noted-cannot determine Radium MCL
  - Gross Alpha MCL can be determined
    - Set ALPHA-AVG-LEVEL=ALPHA-MCL-SUM/Reqd-num-spls
  - Determine Gross Alpha MCL Violations
    - Check ALPHA-AVG-LEVEL against LMCL in the ICT
    - ALPHA-AVG-LEVEL > LMCL
    - PWS is in violation of Gross Alpha MCL
      - Create MCL Violation Transaction for the VIF
      - Create VIFI Report Record
      - Build CSPD's in stored CSF Record
      - EXIT to *CHECK LOW MCL
  - ALPHA-AVG-LEVEL ≤ LMCL
    - PWS not in violation of Gross Alpha MCL
    - Blank out CSPD's in Stored CSF Record
    - EXIT to *CHECK LOW MCL

Appendix E.5

* CHECK LOW MCL

- Determine whether a message will be written to indicate that Annual Sampling may be allowed
- Check Violation-flag
- Violation-flag = 1 or 3
  - Set ALPHA-MCL-LOW=(Single-frac) x (XMCL) from the state ICT
  - Set RADIUM-MCL-LOW=(Single-frac) x (RMCL) from the state ICT
  - Check ALPHA-AVG-LEVEL against ALPHA-MCL-LOW and RADIUM-AVG-LEVEL against RADIUM-MCL-LOW
  - Both AVG-LEVEL's less than MCL-LOW values
    - Produce message "LOW NATURAL RADIOACTIVITY LEVEL FOR PWS XXXXXXX, SINGLE SAMPLE FOR STATE MAY BE SUBSTITUTED" on the Warnings Report
    - Exit if Violation-flag = 1
  - Either AVG-LEVEL $\geq$ corresponding MCL-LOW value
    - EXIT if Violation-flag = 1
- Violation-flag = 2 or 3
  - If Violation-flag = 3, EXIT to A
  - Set ALPHA-MCL-LOW = (single-frac) X (RMCL) from the Federal ICT
  - Set RADIUM-MCL-LOW = (single-frac) X (RMCL) from the Federal ICT
  - Check ALPHA-AVG-LEVEL against RADIUM-MCL-LOW and RADIUM-AVG-LEVEL against RADIUM-MCL-LOW
  - Both AVG-LEVEL's less than MCL-LOW values
    - Produce message "LOW NATURAL RADIOACTIVITY LEVEL FOR PWS XXXXXXX, SINGLE SAMPLE FOR FEDERAL MAY BE SUBSTITUTED" on the Warnings Report
    - EXIT to PROCESS SAMPLING-VIOLS
  - Either AVG-LEVEL $\geq$ corresponding MCL-LOW value
    - EXIT TO PROCESS-SAMPLING VIOLS

Appendix E.5

* CHECK TIME LEFT

- Turn ANNUAL AVERAGE SW off
- If Compliance flag = 1
  - Add 1 to RADIUM-SAMPLING-FLAG
    If Compliance flag not = 1
  - Check current date against sample date in quarter array
  - Current-date > sample date + 1 year + lag
    - Required Radium 228 Analysis is missing
      Sampling Violation
    - Add 1 to RADIUM-SAMPLING-FLAG
    - EXIT to *PROCESS EACH REGULAR SAMPLE
  - Current date ≤ Sample date + 1 year + lag
    - Time left to report Radium 228 Analysis Result unless RSPD is over
    - SET Radium-Sampling flag to 0
    - SET NOGO-flag to 1
    - EXIT to *PROCESS EACH REGULAR SAMPLE

Appendix E.5

```
*  PROCESS SAMPLING VIOLS
   -    Check ALPHA SAMPLING FLAG
        -    If ALPHA-SAMPLING-FLAG > 0
               Gross Alpha Sampling Violation
             -    Create VIP-SPLG-REPT-RECORD using ALPHA-SAMPLING-
                    FLAG for number of samples in violation
             -    Create Sampling Violation transaction for the VIP
             -    Depending on Violation Flag, use PP or SP for
                    Federal or State regulation violated and create
                    2 records of violation-flag = 3
   -    Check RADIUM-SAMPLING-FLAG
          If RADIUM-SAMPLING-FLAG > 0
          Combined Radium Sampling Violation
        -    Create Sampling Violation transaction for VIP
        -    Create VIP-SPLG-REPT-RECORD using RADIUM-SAMPLING-FLAG for
               number of samples in violation
        -    Depending on Violation Flag, use PP or SP for Federal or
               State regulations violated and create 2 records if
               violation flag = 3
        -    EXIT to *SET RSPD's
        if RADIUM-SAMPLING FLAG NOT > 0
        -    Check Radium-228 switch
        -    If Radium-228 switch on
             -    EXIT to *SET RSPD's
        -    If Radium 228 off
             -    Check Initial Period flag
                  -    If Initial Period flag off
                       -    exit to *SET RSPD's
                  -    If Initial Period flag on
                       -    Produce message "RADIUM 228 ANALYSIS NOT
                              PERFORMED FOR PWS XXXXXXX DURING INITIAL
                              MONITORING PERIOD" on the Warning Report
                       -    EXIT to *SET RSPD's
```

Appendix C.5

```
*   SET RSPD's
    -   Check Violation-flag
    -   Violation-flag = 1
        -   State RSPD's to be set (if NOGC-FLAG is off)
        -   Check for State SPLG VE ARRAY record
        -   No state SPLG VE ARRAY record
            -   Turn off Rglr-Splg-Warning Switch
            -   No State Sampling V&P in effect
            -   Set the new State RSPD's for cont-ID=4000
                -   Check the State CSPD's for cont-ID=
                    4000
                -   CSPD's "blank"
                    -   New State RSPD Start Date=Old
                        State RSPD End Date + 1 day
                    -   New State RSPD End Date=Old
                        State RSPD End Date + State
                        mon-period
                -   CSPD's "non-blank"
                    -   New State RSPD Start Date=State
                        CSPD Start Date
                    -   New State RSPD Start Date=State
                        CSPD End Date
                -   Copy new State RSPD's to stored CSF
                    Record (cont-ID=4000)
            -   Set the new State RSPD's for cont-ID=4010
                -   Do the same for cont-ID=4010
                -   EXIT to *CHECK VIOL FLAG
    -   State SPLG VE ARRAY Records found
        -   Ch k state SPLG VE ARRAY records for
            cont-ID=4000
            ecord found in State SPLG VE ARRAY with
            ont-ID=4000
            -   Set the RSPD's by checking the CSPD's as above
            -   Exit to *CHECK SET RSPD's DONE
        -   Record found in State SPLG VE ARRAY with
            cont-ID=4000
            -   State Sampling V&E may still be in effect
            -   Check End Date of State SPLG VE ARRAY recor
            -   End Date "blank"
                -   State  Sampling V&P still in effect
                -   Check Start Date of State SPLG VE ARRAY
                    record
                -   State SPLG VE ARRAY record ≤ Start Date
                    -   State  RSPD Start Date
                    -   Turn off Rglr-Splg-Warning switch
                    -   Set new State RSPD's for cont-ID
                        =4000
                        -   Check State CSPD's for cont-ID
                            =4000
                        -   CSPD's "blank"
                            -   New State RSPD Start Date
                                =old State RSPD End Date
                                + 1 day
                            -   New State RSPD End Date
                                =Old State RSPD End Date
```

Appendix C.5

```
                    + State SPLG VE ARRAY
                    record ALT-SPLG value
              -  CSPD's "non-blank"
                 -  New State RSPD Start
                    Date=State CSPD Start
                    Date
                 -  New State RSPD End Date=
                    State CSPD Start Date +
                    State SPLG VE ARRAY
                    record ALT-SPLG value
              -  Copy new State RSPD's tc
                 stored CSF record
              -  Exit to *CHECK SET RSPD's DONE
        -  State SPLG VE ARRAY record Start Date >
           State RSPD Start Date but within State
           RSPD + lag
           -  Turn on Rglr-splg-warning switch
           -  Transition to sampling V&E period
           -  Set new RSPD's for cont-ID=4000
              -  New State RSPD Start Date =
                 State SPLG VE ARRAY record
                 start date field
              -  New State RSPD End Date=New
                 State RSPD Start Date +
                 State SPLG VE ARRAY record
                 ALT-SPLG field value minus
                 1 day
           -  Copy new State RSPD's tc stored
              CSF record
           -  Exit to *CHECK SET RSPD's DONE
        -  State SPLG VE ARRAY record Start Date
           State RSPD's + lag
           -  Turn off Rglr-splg-warning switch
           -  Set new State RSPD's for cont-ID
              =4000
              -  Check the State CSPD's for
                 cont-ID=4000
              -  CSPD's "blank"
                 -  New State RSPD Start
                    Date=Old State RSPD End
                    Date + 1 day
                 -  New State RSPD End Date=
                    Old State RSPD End Date
                    State 'mon-period
              -  CSPD's "non-blank"
                 -  New State RSPD Start Date
                    = State CSPD Start Date
                 -  New State RSPD End Date =
                    State CSPD End Date
              -  Copy new State RSPD's to
                 stored CSF Record (cont-ID=
                 4000)
        -  EXIT TO *CHECK SET RSPD's DONE
```

```
- End Date < State RSPD Start Date
  - Normal Regular Sampling Processing
  - Turn off Rlgr-splg-warning switch
  - Set new State RSPD's for cont-ID=
    4000
    - Check the State CSPD's for
      cont-ID=4000
    - CSPD's "blank"
      - New State RSPD Start
        Date = Old State RSPD End
        Date + 1 day
      - New State RSPD End Date =
        Old State RSPD End Date +
        State mon-period
    - CSPD's "non-blank"
      - New State RSPD Start Date
        =State CSPD Start Date
      - New State RSPD End Date=
        State CSPD End Date
    - Copy new State RSPD's to stored
      CSF Record (cont-ID=4000)
    - Exit to *CHECK SET RSPD's DONE
- End Date within State RSPD's
  - Turn on Rqlr-Splg-Warning switch
  - Transition tc Normal
    Sampling Period
  - Set new RSPD's for cont-ID=4000
    - New State RSPD Start Date=
      State SPLG VE ARRAY record
      End Date + 1 day
    - Check State CSPD's for cont-ID
      =4000
    - CSPD's "blank"
      - New State RSPD End Date=
        State SPLG VE ARRAY
        record End Date + State
        mon-period
    - CSPD's "non-blank""
      - New State RSPD End Date=
        State CSPD End Date
      - Copy new State RSPD's to
        stored CSF record
      - Blank out state SPLG VE ARRAY
        record
      - Exit to *CHECK SET RSPD's DONE
- End Date within lag dates of State RSPD
  + lag
  - Turn on Rqlr-Splg-warning switch
  - Transition to Normal Sampling
    Period
```

```
                - Set new RSPD's for cont-ID=4000
                  - Check the State CSPD's for
                    cont-ID=4000
                  - CSPD's "blank"
                    - New State RSPD Start
                      Date=Old State RSPD
                      End Date+1 day
                    - New State RSPD End Date=
                      Old State RSPD End Date
                      + State mon-freq
                  - CSPD's "non-blank"
                    - New State RSPD Start
                      Date=State CSPD Start
                      Date
                    - New State RSPD End Date=
                      State CSPD End Date
                  - Copy new State RSPD's to stored
                    CSP Record (cont-ID=4000)
                - Blank out State SPLG VE ARRAY record
                - Exit to *CHECK SET RSPD's DONE
              - End Date > State RSPD + lag
                - Turn off Rglr-Splg-warning switch
                - Set new State RSPD's for cont-ID=
                  4000
                  - Check the State CSPD's for cont-
                    ID=4000
                  - CSPD's "blank"
                    - New State RSPD Start Date=
                      Old State RSPD End Date +
                      1 day
                    - New State RSPD End Date=
                      Old State RSPD End Date
                      + State mon-freq
                  - CSPD's "non-blank"
                    - New State RSPD Start Date=
                      State CSPD Start Date
                    - New State RSPD End Date=
                      State CSPD End Date
                  - Copy new State RSPD's to
                    stored CSP Record (cont-ID=
                    4000).
                - Blank out State SPLG VE ARRAY record
                - Exit to *CHECK SET RSPD's DONE

            * CHECK SET RSPD's DONE
            - Do the same (* SET RSPD's
              for CONT-ID=4010, when
              done EXIT to
            *   CHECK-VIOL-FLAG
            * CHECK VIOL FLAG
              - Violation flag = 2
              - Return to *SET RSPDS substituting
                Federal for State when it appears
                in the logic
              - Exit to *SET RSPDS
```

- Violation flag = 3
  - Return to SET RSPD's using State
  - Return to SET RSPD's using Federal
  - Exit to *CHECK RGLR-SPLG-WARNING-SLOW

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```
*   Check RGLR-SPLG-WARNING Switch
-   Rglr-Splg-warning switch on
    -   Produce message "Gross Alpha
          samples missing within the
          XX/XX/XX to XX/XX/XX for
          PWSXXXXXXX" on the Warnings
          Report
    -   Exit to *RESET SSC
-   EXIT to *RESET SSC
```

* RESET SSC's

This is to set any SSC and UFC's which were missed during Violation processing

```
-   Check VIOLATION-FLAG
-   If VIOLATION-FLAG = 1 or 3
      -   Check STATE UFC's on CPA
      -   If STATE UFC = blank
            -   Set STATE UFC to 'B'
            -   Set STATE SSC to '4'
-   If VOLATION-FLAG = 2 or 3
            -   Check FED UFC's on CPA
            -   If FED UFC = blank
                  -   Set FED UFC to 'B'
                  -   Set FED SSC to '4'
-   EXIT to *PROCESS VIOLATIONS
```

Appendix E.5

* SET ALPHA MCL CHECK FIELD

- Load V&E information and modify frequency if PWS is in violation from the previous period
- Check consec-counter
- Consec-counter = 1
- Check the Violation-flag
- Violation-flag = 1 or 3
  - State compliance being run
  - Check State CSPD's on stored CSF record for cont-ID=4000 and cont-ID=4010
  - State CSPD's "blank" in both
    - No action
  - State CSPD's "non-blank" in either
    - PWS was in previous State MCL Violation
    - Set mon-period=viol-freq in the State ICT
  - Violation-flag = 2 or 3
    - Federal compliance being run
    - Check fed CSPD's on stored CSF record for cont-ID= 4000 and cont-ID = 4010
    - Fed CSPD's "blank" in both
      - No action
    - Fed CSPD's "non-blank" in either
      - PWS was in previous Federal MCL Violation
      - Set mon-period = Viol-freq in Fed ICT
  - Consec-counter ≠ 1
    - No action
  - Check the Violation-flag
  - Violation-flag = 1 or 3
    - Check if any records in the State MCL VE ARRAY
    - No records in the State MCL VE ARRAY
    - No State MCL V&E in effect
      - EXIT
    - Record(s) in the State MCL VE ARRAY
      - Check the CPA Sample Date (for Cont-ID=4000)
      - No records with cont-ID=4000 in State MCL VE ARRAY
        - EXIT
      - Record(s) with cont-ID=4000 in State MCL VE ARRAY
        - Check the CPA Sample Date agianst the Start Date and End Date of each State MCL VE ARRAY record (ccnt-ID=4000) to find a matching V&E record
      - State MCL VE ARRAY record found whose dates include the CPA Sample Date
        - Load the MOD-MCL field value into BMCL in the State ICT
        - EXIT

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- No state MCL VE ARRAY record found whose dates include the CPA Sample Date
  - Load the State IRT XMCL into LMCL in the State ICT
  - EXIT

- Violation-flag = 2 or 3
  - (Check fed MCL VE ARRAY as above) replacing State with Federal in the logic

Appendix E.5

SET_RADIUM_MCL_CHECK_FIELD

- Check the Violation-flag
- Violation-flag = 1 or 3
  - Check if any records in the State MCL VE ARRAY
  - No records in the State MCL VE ARRAY
    - No State MCL V&E in effect
    - EXIT
  - Record(s) in the State MCL VE ARRAY
    - Check for records with cont-ID=4010
    - No records with cont-ID=4010 in State MCL VE ARRAY
    - EXIT
  - Record(s) with cont-ID=4010 in State MCL VE ARRAY
    - Check the CPA Sample Date against the Start Date and End Date of each State MCL VE ARRAY record
    - State MCL VE ARRAY record found whose dates include the CPA Sample Date
      - Load the MOD-MCL field value into RMCL in the State ICT
      - EXIT
    - No State MCL VE ARRAY record found whose dates include the CPA Sample Date
      - Load the State IRT RMCL value into RMCL in the State ICT
      - EXIT
- Violation-flag = 2 or 3
  - Return to *SET RADIUM MCL CHECK FIELD replacing State with Federal in the logic.

Appendix A.6

Compliance Overview for Gross Beta

Use Sections:

- BUILD INTERNAL REGULATIONS TABLES
- PROCESS PWF
- PROCESS CSF
- PROCESS SAF
- PROCESS PSF
- PROCESS VIOLATIONS
- PROCESS PWS BREAK

Appendix B.6

- Process PWF

    - Check for PWF Endfile
        - PWF-EOF - on
            - EXIT to 'PROCESS CSF'
        - PWF-EOF - off
            - Check if PWS is "excluded"
            - PWS is "excluded"
                - Turn on PWS-EXCL switch
                - EXIT to 'PROCESS SAF'
            - PWS is not "excluded"
                - Turn off PWS-EXCL switch
                - EXIT to 'PROCESS CSF'

Note: Reference *Read PWF

Appendix C.6

- Build Internal Regulations Tables

  - READ RGF
  - Check if RGF endfile:
  - RGF-EOF on
    - Check if Regs records missing
      - none missing
        - close RGF
        - EXIT to 'PROCESS PWF'
      - One or more missing
        - produce error messages
        - Close RGF
        - EXIT to 'Terminate' - end of program
  - RGF-EOF off
    - Check contaminant group (first two digits of CONT-ID) of the RGF record
    - Contaminant group = 41, 42 or 43
    - Check the Table ID (position 7) of the RGF record
    - Table ID = 3
      - Store record in Major Beta Emitter Table
    - Table ID ≠ 3
      - Check the Regulation Level of the RGF record
      - Regulation Level = FS or FP
        - Store in Federal Internal Regulations Record
        - Return to 'READ RGF'
      - Regulation Level = SS or SP
        - Store in State Internal Regulations Record
        - Return to 'READ RGF'
      - Contaminant group ≠ 41, 42 or 43
        - Return to 'READ RGF'

```
-   PROCESS CSF

    -   Check for saved old CSF record:
        -   Saved CSF switch on:
            -   Restore old CSF record to CSF area
            -   Turn off saved CSF switch
    -   Check if CSF record is to be read:
        -   Read CSF switch - on:
            -   Read the next CSF record
            -   On end of file, turn on CSF-EOF switch, turn
                off - Read CSF switch
    -   Check for CSF endfile
    -   CSF-EOF on
        -   Zero out CSF area
        -   Check for PWF endfile
        -   PWF-EOF on
            -   EXIT to 'PROCESS SAF'
        -   PWF-EOF off
            -   Check if PWS is "excluded"
            -   PWS is "excluded"
                -   Do not build CSF records
                -   EXIT to 'PROCESS SAF'
            -   PWS is not "excluded"
                -   Build new CSF records in stored CSF areas
                    using PWS-ID, Cont-ID is = 4100, 4100, 4171
                    and 4249
                    *   PROCESS VE DATA
                    *   INITIALIZE CSF SAMPLING DATES
                    -   EXIT to 'PROCESS SAF'
    -   CSF-EOF off
        -   Move CSF record to CSF area
        -   Check CSF PWS-ID against stored PWS-ID
        -   CSF PWS-ID < stored PWS-ID
            -   Move CSF record to CSF Output record
            -   Do not build new CSF records
            -   Turn on Read CSF switch
            -   Return to 'PROCESS CSF'
        -   CSF PWS-ID = stored PWS-ID
            -   Check if PWS is "excluded"
            -   PWS is "excluded"
                -   EXIT to 'PROCESS SAF'
            -   PWS is not "excluded"
                -   Check CSF Cont-ID
                -   CSF Cont-ID < 4100
                    -   Copy CSF record to CSF Output record
                    -   Write CSF Output record
                    -   Read CSF
                    -   Return to 'PROCESS CSF'
                -   CSF Cont-ID = 41XX, 42XX, or 43XX
                    -   Move CSF record to CSF-4100 area
                    *   PROCESS VE DATA
                    *   INITIALIZE CSF SAMPLING DATES
                    -   Return to 'PROCESS CSF'
                -   CSF Cont-ID ≠ 41XX, 42XX, or 43XX
```

```
                        -    Move CSF record to
                             saved CSF area
                        -    Build new CSF record in stored
                             CSF area using stored PWS-ID
                             and correct Cont-ID
                        -    Turn on saved CSF switch
                        -    Turn off Read CSF switch
                        -    Return to 'PROCESS CSF'
-    CSF PWS-ID > stored PWS-ID
     -    Build missing CSF records (if any)
     -    EXIT to 'PROCESS SAF'
```

Appendix D.6

PROCESS SAF

```
-    Check if SAF record is to be read:
     -    Read SAF switch - on:
          -    Read the next SAF record
          -    On end of file, turn on SAF-EOF switch,
               turn off Read SAF switch
-    Move 'low-values' to sample key
-    Check for SAF endfile
-    SAF-EOF on
     -    EXIT to 'PROCESS PSF'
-    SAF-EOF off
     -    Check for PWF endfile
     -    PWF-EOF on
          -    Copy SAF record to SAF Output area
          -    Write SAF Output record
          -    Procude Warning "SAF sample record PWS-ID not on
               PWF" in the Warnings Report
          -    Return to 'PROCESS SAF'
     -    PWF-EOF off
          -    Check SAF PWS-ID against stored PWS-ID
          -    SAF PWS-ID < stored PWS-ID
               -    PWS on file not on PWF
               -    Produce Warning "SAF sample record PWS-ID
                    not on PWF' in the Warnings Report
               -    Copy SAF record to SAF Output area
               -    Return to 'PROCESS SAF'
          -    PWS-ID match
               -    Copy SAF record to SAF Output Area
               -    Write SAF Output record
               -    Return to 'PROCESS SAF'
          -    SAF PWS-ID > stored PWS-ID
               -    Exit to 'PROCESS PSF'
```

Appendix D.6

PROCESS PSF

```
-   Check if PSF reccrd is to be read:
    -     Read PSF-switch on:
          -     Read the next PSF record
          -     On end of file, turn on PSF-EOF switch,
                -     Turn off Read PSF switch
                -     Exit to 'DETERMINE SSC's

-   Check if man-made rads:
    -     PSF Cont-ID = 41XX, 42XX, or 43XX
          -     Check for PWF endfile
                -     PWF-EOF - on
                      -     Assign new SAF sample key (date only)
                      -     Set SSC to 44, UFC to BB
                      -     Copy PSF sample record to SAF output area
                      -     Produce warning "PSF sample record PWS-ID
                            not on PWF" in the Warnings Report
                      -     Write SAF output record
                      -     Return to 'PROCESS PSF'
                -     PWF-EOF - off
                      -     Check PSF PWS-ID against stored PWS-ID
                      -     PSF PWS-ID < stored PWS-ID
                            -     PWS on file not on PWF
                            -     Produce warning "PSF sample record PWS-ID
                                  not on PWF" in the Warnings Report
                            -     Assign new SAF Sample Key (date only)
                            -     Set SSC to 44, UFC to BB
                            -     Copy PSF sample to new SAF
                            -     Return to 'PROCESS PSF'
                      -     PWS-ID match
                            -     Check if PWS is "excluded"
                            -     PWS-EXCL switch - on
                                  -     PWS "excluded" from sampling
                                  -     Assign new SAF sample key (date only)
                                  -     Set SSC to 99, UFC to 99
                                  -     Copy sample to SAF output area
                                  -     Write SAF output record
                                  -     Return to 'PROCESS PSF'
                            -     PWS-EXCL switch - off
                                  -     PWS not "excluded" from sampling
                                  -     Check if valid Cont-ID
                                        -     Valid Cont-ID -
                                              * STORE PSF RECORD
                                        -     Not valid Cont-ID -
                                              -     Assign new SAF sample key
                                                    (date only)
                                              -     Set SSC to 44, UFC to BB
                                              -     Copy PSF sample record to
                                                    SAF Output area
                                              -     Write SAF Output record
                                              -     Produce warning "ERROR -
                                                    PSF CONTAMINANT ID INVALID'
                                                    in the Warnings Report
                                              -     Return to 'PROCESS PSF'
```

- PSF PWS-ID > stored PWS-ID
  - Turn off Read PSF switch
  - EXIT to 'DETERMINE SSC's'

- Not man-made Rads
  - Turn on Read PSF switch
  - Return to 'PROCESS PSF'

Appendix E.6

PROCESS VIOLATIONS

- Violations Processing is done in several sections with MCL Violations first, followed by Sampling Violations
- For those PWS's that are "excluded", the Violations Processing sections are skipped
- Conditions are checked to determine whether Violations Processing sections are to execute only once (Federal and State conditions are identidical) or twice (Federal and State conditions different)
- Set up Regular Sampling Period Dates (RSPD's)
- Set No-Go switch to zero
- Set up first QTR-CONT-ID-PTRs:
  #1 = 4100
  #2 = 4102
  #3 = 4174
  #4 = 4264
  #5 = 4172
  #6 = 4270
- Check if PWS is "State" only (PWF field 'REGULATED-BY")
- PWS is "State" only
  - Set violation-flag to "1"
    * PROCESS VIOLATIONS - only state violations are identified
    - EXIT to 'PROCESS PWS BREAK'
- PWS is not "State" only
  - Scan Fed and State ICT's (every element)
  - Every element matches in ICT's
    - Set violation-flag to "3"
    * PROCESS VIOLATIONS LOAD - any Federal Violations are automatically State Violations
    - EXIT to 'PROCESS PWS BREAK'
  - Every element does not match in ICT's & VF ARRAYS
    - Set violation-flag to "2"
    * PROCESS VIOLATIONS LOAD - Federal only
    - EXIT to 'PROCESS PWS BREAK'

Appendix B.6

PROCESS_PWS_BREAK

- Check if any samples in CPA:
  - CPA-SPL-LIMIT greater than zero
    - unload CPA to PSF or SAF depending on copy flag of crack sample
  - If PWS is not excluded, copy over CSF records to new CSF
  - If CSF record was saved, restored saved CSF record to CSF area
- Return to 'PROCESS PWF' to process next PWS.

Appendix B.6

* READ_PWF

a. The PWF is the master file for processing all the PWS's
b. Determine if a PWS is "excluded" from compliance processing due to one of the following: = N)
   (I) Non-community PWS (PWF-PLANT-TYPE and only community monitoring required state wide (REGS)
   (II) Ground water only PWS (no PWF-PLANT-SOURCE-CODE values of S or P) and only monitoring of surface PWS's required state wide or PWF-STATE-GROUND-WATER-MONITOR=0 or 1
   (III) Inactive PWS (PWF-PLANT-ACTIVITY = I)
   (IV) Consecutive PWS, no monitoring (PWF-PLANT-CONSEC-INDICATOR = 1)
   (V) PWS Regulated by neither Federal or State Regulations (PWF-STATE-REGULATE-BY = N)
   (VI) PWS begin date (PWF-PLANT-BEGIN-DATE) greater than the current date
   (VII) PWS not monitored for radioactivity (PWF-STATE-RADIOACTIVE-FLAG = 0 or 1)
   (VIII) PWS population served (PWF-PLANT-POPULATION-SERVED) less than population required for monitoring (REGS)
c. If the PWS does <u>not</u> meet any of the above criteria:
   (I) Store the PWF record for later use in modifying the Internal Compliance Tables (ICT's)
   (II) The entire remaining portion of the logic is performed for each PWS
d. If the PWS <u>meets</u> any of the above criteria, turn on the PWS-EXCL switch and EXIT to 'READ SAF RECORD'

Appendix C.6

* BUILD INTERNAL COMPLIANCE TABLES

- Build Federal ICT
- Copy the following fields from the Federal IRT to the Federal ICT
  - Effective Date
  - Man-made Radionuclide Annual MCL Dosage (BMCL)
  - Tritium Screening Level (HSL)
  - Strontium-90 Screening Level (SSL)
  - Gross Beta Screening Level for Major Beta Emitters (BSL)
  - Gross Beta Screening Level for Cesium-134 and Strontium-89 (BSLO)
  - Community-flag
  - Ground water flag
  - Population indicator (pop-ind)
  - Required Samples per year (Reqd-num-spls)
  - Normal Monitoring Frequency (non-freq) (convert to months)
  - Violation frequency (viol-freq)
  - Number of Iodine-131 Samples (Num-I-spls)
  - Number of Strontium-90 and Tritium Samples (Num-S-spls)
  - Iodine-131 monitoring frequency (I-Mon-freq)
  - Strontium-90 and tritium monitoring-frequency (S-Mon-freq)
  - Iodine-131 consecutive daily samples (I-consec-spls)
- Build State ICT's
- Copy the same fields from the State IRT to the State ICT
  - Effective Date
  - BMCL
  - HSL
  - SSL
  - BSL
  - BSLO
  - Community flag
  - Ground water flag
  - Pop-ind
  - Reqd-num-spls
  - Viol-freq
  - Num-I-spls
  - Num-S-spls
  - I-mon-freq
  - S-mon-freq
  - I-consec-spls
- Modify ICT's from the PWF
- Scan the stored PWF record for the following conditions:
  - Examine PWF-STATE-RADIOACTIVE-MONITOR
  - PWF-STATE-RADIOACTIVE-MONITOR=1
    - Set Fed and State Reqd-num-spls=1
    - Turn on Detect-limit flag
  - PWF-STATE-RADIOACTIVE-MONITOR=2
    - Set Fed and State Reqd-num-spls=1
    - Turn off Detect-limit flag
  - PWF-STATE-RADIOACTIVE-MONITOR=3
    - Turn on Detect-limit flag

- PWF-STATE-RADIOACTIVE-MONITOR=4
  - Turn off Detect-limit flag
- Examine PWF-STATE-BETA-FREQ-MONTHS
- PWF-STATE-BETA-FREQ-MONTHS=00
  - no action
- PWF-STATE-BETA-FREQ-MONTHS=00
  - set Fed and State mon-freq=PWF-STATE-BETA-FREQ-MONTHS
  - Examine PWF-STATE-NUCLEAR-FACILITY
  - PWF-STATE-NUCLEAR-FACILITY='N'
    - Zero out the following in State and Fed ICT's
      - Num-I-spls
      - Num-S-spls
      - I-mon-freq
      - S-mon-freq
      - I-consec-spls
  - PWF-STATE-NUCLEAR-FACILIYT='Y'
    - Set viol-freq=position 63-64 value in corresponding IRT
    - Set BSL=positions 36-38 in corresponding IRT
    - Store PWF-STATE-NUCLEAR-FAC-TYPE1 and PWF-STATE-NUCLEAR-FAC-TYPE2 in FATY ARRAY
  - Scan PWF-STATE-FAC-CONTAMINANT-ID fields in the PWF record
  - PWF-STATE-FAC-CONTAMINANT-ID=4249
    - Check I-mon-freq in ICT
    - I-mon-freq=00
      - no action
    - I-mon-freq = 00
      - set I-mon-freq=PWF-STATE-CONTAMINANT-FREQ
  - PWF-STATE-FAC-CONTAMINANT-ID=4249
    - no action

Note: Whenever the values in these fields are referenced in the logic, they may be called "check fields" to indicate that they are Regulation Values. Those MCL and mon-freq values changed by V&E are to be loaded in a later section of the logic.

Appendix C.6

* PROCESS_VE_DATA

- STORE PWF VE DATA (if cont-ID = 4100)
  - Check the PWF V&E Data Fields
  - One or more PWF V&E DATA Fields non-blank
    - Turn on PWF-VE-DATA switch
    - Move data from non-blank PWF V&E Data Fields to the PWF VE ARRAY
  - Exit to 'PROCESS CSF VE DATA'
- PROCESS CSF VE DATA
  - Check the CSF VE Data Fields in (CSF-4100) Stored Record
- Any of the CSF FE Data Fields are non-blank
  - Store the data from non-blank CSF VE Data fields in the CSF FE ARRAY
  - EXIT to 'PROCESS CSF VE ARRAY'
- PROCESS CSF FE ARRAY
  - Process for each entry in the CSF VE ARRAY
  - Check the END DATE of the record
  - END DATE = zero
    - V&E may still be in effect
    - Check PWF-VE-DATA Switch
  - PWF-VE-DATA switch off
    - V&E no longer in effect
    - Enter Current Date as END DATE in the CSF VE ARRAY record
    - Return to 'PROCESS CSF VE ARRAY'
  - PWF-VE-DATA switch on
    - Check PWF VE ARRAY for a match on MCL (MOD-MCL) and Sampling Period (ALT-SPLG)
    - No match on MOD-MCL & ALT-SPLG in PWF FE ARRAY
      - Process same as 1
      - Return to 'PROCESS CSF VE ARRAY'
    - Match on MOD-MCL & ALT-SPLG in PWF VE ARRAY
      - V&E still in effect
      - flag PWF VE ARRAY record as "processed" - turn on 'PWF-PROC' flag in PWF VE ARRAY
      - Return to 'PROCESS CSF VE ARRAY'
  - END DATE OF CSF VE ARRAY record non-blank
    - Enter Current Date on END DATE in the CSF VE ARRAY record
- PROCESS PWF VE DATA
  - Check the PWF-VE-DATA switch
  - PWF-VE-DATA switch off
    - No PWF VE Data for Man-made Radionuclides
    - EXIT to 'RESTORE CSF VE DATA'
  - PWF-VE-DATA switch on

Appendix C.6

* MODIFY ICR (INTERNAL COMPLIANCE RECORD) BY VE

- Check the CSF-VE-DATA switch
- CSF-VE-DATA switch off
  - No V&E Data to Process
  - EXIT to '*INITIALIZE CSF SAMPLING DATES'
- CSF-VE-DATA switch on
  - Process for each set of CSF VE Data
  - Check the MOD-MCL field against the Fed MCL Check Field (FED-MCL-ANNUAL-DOSAGE)
  - MOD-MCL = zero and ALT-SPLG = zero
    - Sampling exemption for this PWS
    - Turn on PWS-EXEMPT switch
    - Zero out Fed and State MCL VE Arrays for the exemption dates
    - Copy dates from CSF VE ARRAY record to Fed and State MCL and SPLG VE ARRAYS
    - Return to 'MODIFY ICR BY VE'
  - MOD-MCL field > or = to Fed MCL Check Field
    - MCL V&E for both Fed & State
    - Copy MOD-MCL Value & Dates from the CSF VE ARRAY record to the FED MCL VE ARRAY and the STATE MCL VE ARRAY
    - Check the ALT-SPLG field of the CSF VE ARRAY record
    - ALT-SPLG field = zero
    - No further action taken
    - Return to 'MODIFY ICR BY VE'
    - ALT-SPLG field = non-blank
      - MCL & SPLG V&E Value for Fed & State
      - Copy ALT-SPLG value and dates from the CSF VE ARRAY record to the FED SPLG VE ARRAY and the STATE SPLG VE ARRAY
      - Return to 'MODIFY ICR BY VE'
- MOD-MCL field < Fed MCL Check Field
  - MCL V&E for State only
  - Copy MOD-MCL value and Dates from the CSF VE ARRAY record to the STATE MCL VE ARRAY only
  - Check the ALT-SPLG field of the CSF VE ARRAY record
  - ALT-SPLG = non-blank
    - MCL & SPLG V&E for State only
    - Copy ALT-SPLG value and dates from the CSF VE ARRAY record to the STATE SPLG VE ARRAY
    - Return to 'MODIFY ICR BY VE'
  - Process PWF VE ARRAY
  - Check 'PWF-PROC' flag in PWF VE ARRAY record
  - 'PWF-PROC' flag on
    - PWF VE ARRAY record already processed
    - Return to 'PROCESS PWF VE ARRAY'
  - 'PWF-PROC' flag off
    - Turn on CSF-VE-DATA switch
    - Copy PWF VE ARRAY data to CSF VE ARRAY
    - Enter current date as START DATE in CSF VE ARRAY record
    - Return to 'PROCESS PWF VE ARRAY'

Appendix C.6

```
-   RESTORE CSF VE DATA
    -   Check the CSF-VE-DATA switch
    -   CSF-VE-DATA switch off
        -   No V&E Data to process
        -   EXIT to *MODIFY INTERNAL COMPLIANCE HOLD AREA
    -   CSF-VE-DATA switch on
        -   Copy the last four (4) CSF VE ARRAY records for
            Cont-ID 4100 to the CSF VE Data Fields in the
            appropriate CSF record
        -   EXIT to *MODIFY ICR BY VE'
```

Appendix C.6

* INITIALIZE_CSF_SAMPLING_DATES:

- FEDERAL:
  - Check if the Fed RSPD's are blank -
  - FED RSPD's = ∅:
    - Check if record in Fed SPLG VE ARRAY:
      - Record in Fed SPLG VE ARRAY:
        - Use the Start Date from the Fed SPLG VE ARRAY record, giving the Fed RSPD Start Date
        - Add the length from the Fed SPLG VE ARRAY record minus 1 to the Start Date from the Fed SPLG VE ARRAY record, giving the Fed RSPD End Date
      - No record in Fed SPLG VE ARRAY:
        - Use the Effective Date Check Field of the Fed Regs, giving the Fed RSPD Start Date
        - Add the Fed Rglr-Splg-Prd Check Field length to the Fed Effective Data Check Field minus 1, giving the Fed RSPD end Date
    - Copy the Fed RSPD's to the Stored CSF record
  - Fed RSPD's = non-∅:
    - No action take here

- STATE:
  - Check if the State RSPD's are blank -
  - State RSPD's = ∅:
    - Check if record in State SPLG VE ARRAY:
      - Record in State SPLG VE ARRAY:
        - Use the Start Date from the State SPLG VE ARRAY record, giving the State RSPD Start Date
        - Add the length from the State SPLG VE ARRAY record minus 1 to the Start Date from the State SPLG VE ARRAY record, giving the State RSPD End Date
      - No record in State SPLG VE ARRAY:
        - Use the Effective Date Check Field of the State Regs, giving the State RSPD Start Date
        - Add the State Rglr-Splg-Prd Check Field length to the State Effective Date Check Field minus 1, giving the State RSPD End Date
    - Copy the State RSPD's to the Stored CSF record
  - State RSPD's = non-∅:
    - No action taken here

Appendix D.6

* STORE_PSF_RECORD

- The PSF records are stored by sample groups - samples with the same contaminant ID and PWS-ID and with the same sample ID (SIC) or Sample Dates
- Check PWS-EXEMPT switch
- PWS-EXEMPT switch - on:
  - This contaminant is under a sampling EXEMPTION and no samples required
  - Set Fed & State UFC's to "E"
  - Set SSC to "55"
  - Assign new SAF Sample Key (date only)
  - Copy PSF record to new SAF
  - Return to 'STORE PSF RECORD'
- PWS-EXEMPT switch - off:
  - Process PSF record based on Sample Type and Sample Date
  - Sample Type = "S", "R", "P", or "C"
    - Special Sample
    - Set SSC = "44"
    - Set Fed and State UFC to "E"
    - Assign new SAF Sample Key (date only)
    - Copy PSF record to new SAF
    - EXIT
  - Sample Type = "D"
    - Regular Sample
    - Check Current Date against RSPD Start Date
    - Current Date $\leq$ RSPD Start Date
      - Turn <u>on</u> EARLY-FLAG
      - Check Sample Date against Current Date
      - Sample Date within mon-freq (from state ICR) and lag period prior to current date
        - Store PSF sample in Current Processing Array (CPA)
        - Return to 'PROCESS PSF'
      - Sample Date earlier than non-freq (from State ICT) and lag period prior to current date
        - Sample too old tc process
        - Produce warning "PSF Sample Received Date XX/XX/XX - tco old tc process - copied to SAF as an extra sample" in the Warnings Report
        - Set both UFC's to :B:
        - Set the SSC = "44"
        - Assign new SAF Sample Key (Date only)
        - Copy PSF record tc new SAF
        - Return to 'PROCESS PSF'
      - Sample Date > RSPD End Date & lag
        - Sample not in current sampling period
        - Flag sample tc be copied to the remaining PSF
        - Return to 'PROCESS PSF'
    - Current Date > RSPD Start Date
      - Turn <u>off</u> EARLY-FLAG

- Check Sample Date against RSPD Start Date
- Sample Date < RSPD Start Date
  - Sample too old to process
  - Produce warning "PSF Sample Received Date XX/XX/XX - too old to process - copied to SAP as an extra sample" in the Warnings Report
  - Set both 'UFC's to "B"
  - Set the SSC = "44"
  - Assign new SAP Sample Key (Date Only)
  - Copy PSF record to new SAP
  - Return to 'PROCESS PSF'
- Sample Date > RSPD End Date
  - Sample not in current sampling period
  - Flag sample to be copied to the remaining PSF
  - Return to 'PROCESS PSF'
- Sample Date ≤ RSPD End Date
  - Store PSF sample in Current Processing Array (CPA)
  - Return to 'PROCESS PSF'

- Sample Type = "X"
  - Dummy Sample
  - Store PSF sample in CPA
  - Retrun to 'PROCESS PSF'

Appendix E.6

PROCESS VIOLATIONS - STATE OR FED.

```
-   set no-go switch, special Monitor switch tc zero
-   set up CPA Sample group limit ptrs
-   set up QTR ARRAY:
    -    set Beta-Bad switch to zero
    -    move 3 to Gross Beta Ctr
    -    initialize all 16 QTR-CONT-ID PTRS TC 'HIGH VALUES'
    -    save Fed (or State) RSPD Start
    -    Initialize the Qtr Array to zeroes
    -    Load QTR ARRAY QTR DATES (1-16)
    -    Scan PWF-STATE-FAC-CONTAMINANT-ID fields:
         -    PWF-STATE-FAC-CONTAMINANT-ID not = spaces
              -    check PWF-STATE-CONTAMINANT-FREQ:
              -    PWF-STATE-CONTAMINANT-FREQ = spaces:
                   -    Scan QTR CONT ID PTR Array
                   -    CONT-ID-PTR matches Cont-ID in PWF:
                        -    Return to 'Scan PWF-STATE-FAC-
                             CONTAMINANT-ID fields
                   -    CONT-ID-PTR = 'high-values'
                        -    Set CONT-ID-PTR to PWF-STATE-FAC-
                             CONTAMINANT-ID
                        -    Return to 'Scan PWF-STATE-FAC-
                             CONTAMINANT-ID fields'
              -    PWF-STATE-CONTAMINANT-FREQ not = spaces:
                   *    EXTEND PTR ARRAY SCAN
                   -    Return to 'Scan PWF-STATE-FAC-CONTAMINANT-
                        ID fields:
-   Check Cont-ID of CPA record:
    -    Cont-ID = 4100:
         *    Process Regular Sample SSC's
    -    Cont-ID ≠ 4100:
         *    Process additional analysis SSC's
*   Determine SSC's

-   Set up the Qtr Smpl flags
    -    Zero out the 16 qtr sampl flags in the Qtr Array:
         -    if smpl-N flags 1-3 (or 1-4 if PWF is contaminated)
              are all on, turn on QTR Smpl flag for same Qtr

*   Process QTR ARRAY until No-Go switch = 1

*   Check Special Monitoring - if special Monitor switch = 1 and
    Viclation switch = (1 or 3)
    -    if compliance switch = 1 and there are samples in CPA,
         flag remaining CPA samples to qc to the SAF:
         -    move 1 to SAF-PSF-COPY flag
         -    set SSC tc '44', UFC to 'BB'
```

Appendix E.6

PROCESS VIOLATIONS - STATE OR FED.

```
-   set no-go switch, special Monitor switch tc zero
-   set up CPA Sample group limit ptrs
-   set up QTR ARRAY:
    -    set Beta-Bad switch to zero
    -    move 3 to Gross Beta Ctr
    -    initialize all 16 QTR-CONT-ID PTRS TC 'HIGH VALUES'
    -    save Fed (or State) RSPD Start
    -    Initialize the Qtr Array to zeroes
    -    Load QTR ARRAY QTR DATES (1-16)
    -    Scan PWF-STATE-FAC-CONTAMINANT-ID fields:
         -    PWF-STATE-FAC-CONTAMINANT-ID not = spaces
              -    check PWF-STATE-CONTAMINANT-FREQ:
              -    PWF-STATE-CONTAMINANT-FREQ = spaces:
                   -    Scan QTR CONT ID PTR Array
                   -    CONT-ID-PTR matches Cont-ID in PWF:
                        -    Return to 'Scan PWF-STATE-FAC-
                             CONTAMINANT-ID fields
                   -    CONT-ID-PTR = 'high-values'
                        -    Set CONT-ID-PTR to PWF-STATE-FAC-
                             CONTAMINANT-ID
                        -    Return to 'Scan PWF-STATE-FAC-
                             CONTAMINANT-ID fields'
              -    PWF-STATE-CONTAMINANT-FREQ not = spaces:
                   *    EXTEND PTR ARRAY SCAN
                   -    Return to 'Scan PWF-STATE-FAC-CONTAMINANT-
                        ID fields:
-   Check Cont-ID of CPA record:
    -    Cont-ID = 4100:
         *    Process Regular Sample SSC's
    -    Cont-ID ≠ 4100:
         *    Process additional analysis SSC's
*   Determine SSC's

-   Set up the Qtr Smpl flags
    -    Zero out the 16 qtr sampl flags in the Qtr Array:
         -    if smpl-N flags 1-3 (or 1-4 if PWF is contaminated)
              are all on, turn on QTR Smpl flag for same Qtr

*   Process QTR ARRAY until No-Go switch = 1

*   Check Special Monitoring - if special Monitor switch = 1 and
    Viclation switch = (1 or 3)
    -    if compliance switch = 1 and there are samples in CPA,
         flag remaining CPA samples to qc to the SAP:
         -    move 1 to SAP-PSP-COPY flag
         -    set SSC tc '44', UFC to 'BB'
```

Appendix E.6

* DETERMINE_SSC's

  - The Stored Sample Code (SSC), one for Federal and one for state, in each CPA sample record is set based on Sample Date and other samples of the same "group" (Cont-ID 4100 within a quarter). Quarter array fields and pointer array fields are initialized before processing

Appendix E.6

PROCESS REGULAR SAMPLE SSC's (Cont-ID=4100)

- Check sample date and determine the quarter the sample falls in. This could potentially be from 1 to 16 and represents the subscript of the Quarter Array. Quarter periods are January-March, April-June, July-September and October-December.
- Check the Sample flag (1) in the Quarter Array for the Quarter in which the sample fell
  - Smpl-1 flag on
    - regular Sample already taken this quarter - current regular sample is extra
    - set SSC = "44"
    - set UFC = "BB"
    - move to next CPA record
    - RETURN to 'CHECK CONT-ID of CPA RECORD'
  - Smpl-1 flag off
    - PROCESS GROSS BETA SAMPLE
    - if BETA-BAD flag is on, RETURN to I
    - store SIC in Quarter Array
    - store Sample Date in Quarter Array
    - Set SSC = '11', UFC to "BB"
    - move to next CPA record
    - RETURN to 'CHECK CONT-ID of CPA RECORD'

Appendix E.6

PROCESS ADDITIONAL ANALYSIS SSC's

- Check sample date and determine the quarter the sample falls in
- Search the Quarter Array pointer array until a Cont-ID match is found or until a Cont-ID of "blank" is found
- Cont-ID of blank found in Pointer Array
  - set SSC = '44'
  - set UFC = 'BB'
  - move to next CPA record
  - return to 'CHECK CONT-ID OF CPA RECOBD'
- Cont-ID match found
  - check the smpl-N flag in the quarter array where N-Field number of the matching Cont-ID in the Pointer Array
  - Smpl-N flag on
    - set SSC = '44' unless Sample Type = 'X'
    - set UFC = 'BB' unless Sample Type = 'X'
    - move to next CPA record
    - return to 'CHECK CONT-ID OF CPA RECORD'
  - Smpl-N flag off
    - check CPA Sample Date against Sample Date in Quarter Array
    - Sample dates match
      - turn Smpl-N flag on
      - check Smpl-N value
      - Smpl-N > 4
        - check Smpl-1 flag
        - Smpl-1 flag on
          - set SSC='22'
          - move to next CPA record
          - RETURN to 'PROCESS ADDITIONAL ANAIYSIS SSC's'
        - Smpl-1 flag off
          - turn Smpl-N flag off
          - RETURN to C
      - Smpl-N = 4
        - check Num-I-Spls check field
        - Num-I-Spls check field = 00
          - check Sample flag 1
          - Smpl-1 = 1:
            - set SSC = '22'
            - move to next CPA record
            - return to 'Check Cont-ID of CPA Record'
          - Smpl-1 not = 1:
            - zero out Smpl-4 flag
            - set SSC = '44' UFC = 'BB'
            - move to next CPA record
            - return to Check Cont-ID of CPA record
        - Num-I-Spls check field = 00
          - check smpl-1, smpl-2 and smpl-3 flags
          - one or more flags off
            - turn smpl flags 1-4 off
            - set SSC = '44' UFC = 'BB'

```
                        -   move to next CPA record
                        -   return to 'Check Cont-ID of CPA
                            record'
                    -   All flags on
                        -   set SSC = '11'
                        -   set smpl-4 flag = '2'
                        -   move to next CPA record
                        -   return to 'Check Cont-ID of CPA
                            record'
            -   Smpl-N = 3
                -   check Num-I-Spls check field
                -   Num-I-Spls check field = 00
                    -   check Smpl-1 and Smpl-2 flags
                    -   one or more flags off
                        -   zero out Smpl flags 1-3
                        -   set SSC = '44', UPC = 'BB'
                        -   move to next CPA record
                        -   return to 'Check Cont-ID of CPA
                            record'
                    -   all flags on
                        -   set SSC = 11
                        -   move to next CPA record
                        -   RETURN to 'Check Cont-ID of CPA
                            record'
            -   Smpl-N = 2
                -   set SSC = 11
                -   move to next CPA record
                -   return to 'Check Cont-ID of CPA record'
        -   Sample Dates do not match
        -   check Smpl-N value
        -   Smpl-N flag = 4
            -   check sample type:
                -   Sample Type = 'D'
                    -   set SSC = '44'
                    -   move to next CPA record
                    -   return to 'Check Cont-ID of CPA
                        record'
                -   Sample Type = 'X'
                    -   move to next CPA record
                    -   return to 'Check Cont-ID of CPA
                        record'
        -   Smpl-N flag = 4
            -   Iodine-131 sample, may be later than
                regular sample date
        -   check CPA SIC against Quarter Array SIC
        -   SIC's do not match
            -   set SSC = '44', UPC = 'BB'
            -   move to next CPA record
            -   return to 'Check Cont-ID of CPA record'
        -   SIC's match
            -   turn smpl-N flag on
            -   move '2' to Smpl-N flag
            -   set SSC = '11'
            -   move to next CPA record
            -   return to 'Check Cont-ID of CPA record
```

Appendix E.6

Note: If Num-I-Spls check field = 00, a Regular Sample Group consists of Smpl-1, Smpl-2 and Smpl-3 flags only. Otherwise, the Smpl-4 flag is also included in the Regular Sample Group

Appendix E.6

PROCESS-QTR-ARRAY

- Process the consecutive sample group

- Zero out the Spl Grp Qtr and SPL group ptr
- Set up RSPD's from Fed or State CSP record (1)
- Set up Compliance flag:
  - Current Date $\geq$ RSPD End + lag
    - Move 1 to Compliance flag
  - Current Date $\leq$ RSPD End + lag
    - Move zero to Compliance flag
- Zero out Missing Spls Ctr Major Beta Ctr
- Set up Internal Compliance Check fld record from Fed or State modified ICR
- Check if enough Qtr Spl flags 'on' to process a consecutive spl grp:
  * CHECK QTR FLAGS ARRAY
- If enough Qtr Spl flags on:
  - check if enough consecutive quarters of spls taken to process check
  - set up the CPA sample indexes for the sample group:
  - set CPA flag low ptr to first CPA sample in the quarters of the spl grp
  - set CPA flag high ptr to last CPA sample in the quarters of the Spl grp
  - if no samples are missing - check for MCL violations:
    - zero out Major Beta Ctr
      Qtr Beta Avg Value
      Qtr Beta Avg Level
      Qtr Beta Avg Sum
      EMIT-MCL-SUM
      NUM-SAMPLES
    - set Annual Avg Switch to 1
    - Process MCL for each sample in the group:
      * MCL process loop
    - flag all extra samples in CPA <u>after</u> spl grp to be copied to the PSF
    - if the Annual Avg switch = 1:
      - check the results of the sample group for MCL violation
        * SPL GRP MCL CHECK
      - scan the CPA sample, resetting some of the UFC's and SSC's:
        * SCAN UFC's
- Process the CPA Samples for sampling violations:
  * SPLG VIOL PROCESSING
- Reset the Fed (and State) RSPD's:
  * RSPD PROCESSING
- Set the No-Go switch to 1
- Flag the CPA Samples to go to the SAF or PSF:
  - if Compliance Switch = zero, flag the samples for the PSF
  - if Compliance Switch = 1, flag the samples for the SAF
- Reset the 16 Qtr Spl flags to zero

Appendix E.6

CHECK_QTR_FLAGS_ARRAY

- Zero out Qtr Flag Ctr
  Found Spls Ctr
  CPA Flag Low Ptr
  CPA Flag High Ptr
  CPA Fst Qtr Ptr
  CPA Lst Qtr Ptr
- Count total number of Qtr Spl flags 'on' within the quarters not yet processed which fall within the RSPD's (Qtr Flag Ctr)
- Determine the number of required samples (Num Spls) by multiplying the number of consecutive spls required (from the Int Compl Chk Fld) by the number of spls per quarter (Num Contams)
- Check Qtr Flag Ctr:
  - Qtr Flag Ctr = 0
    - set CPA ptrs to cover range of RSPD's in the CPA
    - check if any samples taken:
    - Fst Qtr Ptr = 1:
      - No samples taken
      - Set Missing Spls Ctr to Num Spls
      - Produce message 'ERROR-GROSS BETA SAMPLE GROUP MISSING' on the Warnings Report
    - Fst Qtr Ptr $\geq$ 0 (sample taken)
      - find number of samples taken (Found Spls Ctr)
      - determine Num Missing Spls by subtracting Found Spls Ctr from Num Spls
      - set up the CPA ptrs to include the CPA area covering the range of the RSPD's
      - produce message 'ERROR GROSS BETA SAMPLE GROUP MISSING' on the Warnings Report

Appendix E.6

* MCL_PROCESS_CHECK

- zero out Fst Qtr Ptr
  Missing Spls Ctr
  Fst Consec Qtr Ptr
  Consec Qtr Ctr
- locate the first Qtr (Fst Qtr Ptr) within the RSPD range which contains samples
- locate the first Qtr (Fst Consec Qtr Ptr) of the group of consecutive Qtr spls
- count the number of consecutive qtrs found (Consec Qtr Ctr)
- check if any samples missing:
  - Consec Qtr Ctr ≥ Num Spls required:
    - no missing samples, turn off No-Go switch
    - check Fst Qtr Ptr against Fst Consec Qtr Ptr
    - Fst Qtr Ptr = Fst Consec Qtr Ptr
      - normal situation
    - Fst Qtr Ptr not = Fst Consec Qtr Ptr
      - produce message 'ERROR - GROSS BETA SAMPLE GROUP MISSING' on the Warnings Report
  - Consec Qtr Ctr ≤ Num Spls required
    - check Compliance switch:
    - Compliance switch = 1
      - Num Missing Spls = number of samples required minus number taken between first and last consecutive quarter
    - Compliance switch off
      - turn on No-Go switch
      - not enough consecutive quarters to run MCL compliance
      - check if there are any periods of the length of one quarter plus lag between the Fst Consec Qtr date and the current date
        - if found, check if Qtr Spl Flag is off
        - if any Qtr Spl Flags off and Beta Early switch is off - produce message 'ERROR-GROSS BETA SAMPLES MISSING' on Warnings Report

Appendix E.6

MCL PROCESS LOOP

```
-   Process for the regular consecutive sample group
-   Loops once for each consecutive quarter
-   Set the Federal (or State) MCL check field
    -     *     Set MCL check field
-   Determine if additional analysis is required:
    -     if the Qtr Beta Avg Value ≥ Gross Beta Screening Level
          (BSL), turn on Addl Analysis switch
*   COMPUTE DOSAGE for Qtr Cont ID (2) Sample in the quarter
    being checked
    -     add dosage to emit MCL Sum
*   COMPUTE DOSAGE for Qtr Cont ID (3) sample in the quarter being
    checked
    -     add dosage to emit MCL Sum
-   If Sample - 4 flag = 2
    -     Nuclear facility is contaminated
    -     Icdine-131 analysis is expected
    *     Compute dosage for Qtr Cont ID (4) sample in the quarter
          being checked
    -     Add dosage to Emit MCL Sum
-   Check the remaining special emitter against the Qtr Cont ID
    Ptrs (7-26)
-   Smpl-N flag = zero
    -     if the smpl-4 flag for the quarter being checked = 2:
          -     check if emitter Cont-ID is valid against the Cont-
                ID Table from the Reqs
          -     if valid:
                -     check if any of the PWF facility types match
                      the emitter sample
                -     if a match is found:
                      -     if Compliance switch is on
                      -     if Addl Analysis switch is one
                            -     add 1 to Num Missing Spls
                            -     Major Beta Emitter Analysis for
                                  Cont-ID was required, is missing
                            -     Turn off Annual Avg switch
                      -     if Addl Analysis switch is off
                            -     turn on Annual Avg switch
                      -     if Compliance switch is off
                            -     check current date against sample
                                  date from CPA sample record:
                            -     Current Date > Sample Date + lag:
                                  -     sampling viclation
                                  -     add 1 to Num Missing Spls
                            -     Current Date ≤ Sample Date + lag
                                  -     time left to report Major
                                        Beta Analysis
                                  -     check Addl Analysis switch:
                                        -     if on, move 1 to No-Go
                                              switch, zero out Num Missing
                                              Spls
    -     if the smpl-u flag is not = 2
          -     process using the same logic as when a match was
                found above
```

- smpl-N flag not = zero
  - Major Beta Emitter Sample analyzed
  - * Compute dosage for sample being checked
  - add dosage to Emit MCL Sum
- Check smpl-4 flag:
  - smpl-4 flag = zero"
    - turn off extra Analysis switch
  - smpl-4 flag not = zero:
    - smpl-4 flag = 1:
      - turn off extra Analysis switch
      - * COMPUTE DOSAGE for Qtr Cont-ID (4) sample in the quarter being checked
      - add dosage to Emit MCL Spm
      - set UFC to 'M'
    - Smpl-4 flag = 2
      - Analysis result > Strontium 89/cesium 134 screening level (contaminated) (BSLO)
        - Stron 89/CES 134 analysis expected
        - Turn on Extra Analysis switch
      - Analysis result ≤ screening level
        - Stron 89/Ces 134 analysis not expected
        - Turn off Extra Analysis switch
- Check smpl-5 flag:
  - smpl-5 flag - <u>off</u>:
    - if Extra Analysis switch is on:
      - turn off Annual Avg switch
      - Analysis Results required
      - check Compliance switch
      - Compliance switch - on:
        - add 1 to Num Missing Spls
      - Compliance switch off:
        - check Current Date against Sample Date from CPA sample record
        - Current Date > Sample Date + lag
          - sampling viclatien
          - add 1 to Num Missing Spls
        - Current Date ≤ Sample Date + lag
          - Time left to report Analysis Result
          - Turn on No-Go switch
          - Zero out Num Missing Spls
  - smpl-5 flag - <u>on</u>:
    - if Extra Analysis switch is off, add 1 to Grcss Beta Ctr
    - * COMPUTE DOSAGE for Qtr Cont-ID Ptr (5) sample
    - Add dosage to emit MCL Sum
    - set UFC tc 'M'
- Check smpl-6-flag
  - smpl-6 flag - <u>off</u>
    - if Extra Analysis switch is on
      - turn off Annual Avg switch
      - Analysis Result required
      - check Compliance switch:
      - Compliance switch - on
        - add 1 to Num Missing Spls
      - Compliance switch - off:

```
                        -    check Current Date against Sample Date
                             from CPA sample record:
                        -    Current Date > Sample Date + lag
                             -    sampling violation
                             -    add 1 to Num Missing Spls
                        -    Current Date ≤ Sample Date + lag
                             -    time left to report Analysis Result
                             -    turn on No-Go switch
                             -    zero out Num Missing Spls
        -    smpl-6-flag - on:
             -    if Extra Analysis switch is off, add 1 to Gross Beta
                  Ctr
             *    COMPUTE DOSAGE for QTR CONT-ID PTR (6) sample
             -    add dosage to Emit MCL Sum
             -    set UFC to 'M'

    -    Scan the CPA for samples within the same Qtr with SSC=22 and
         blank UFC
    -    Sample(s) found with SSC=22 and blank UFC
         -    add 1 to Gross Beta Ctr
         *    COMPUTE DOSAGE for sample found
         -    add dosage to Emit MCL Sum
         -    set UFC to 'M'

    -    End of MCL Process Loop
    -    Check Major Beta Ctr:
         -    Major Beta Ctr > 7:
              -    Exit from Loop
         -    Major Beta Ctr = 7:
              -    Addl Analysis switch - off:
                   -    exit from Loop
              -    Addl Analysis switch - on:
                   -    Compliance switch - on:
                        -    exit from Loop
                   -    Compliance switch - off:
                        -    turn on No-Go switch
                        -    zero out Num Missing Spls
```

Appendix E.6

SPL-GRP-MCL-CHECK

- Check Num Spls required:
  - Num Spls = 1
    - move Emit MCL Sum to Qtr Beta Avg Value
  - Num Spls > 1
    - Qtr Beta Avg Value = $\frac{\text{Emit MCL Sum}}{\text{Num Spls}}$

- Check Avg Value to determine MCL violations
  - Qtr Beta Avg Value > MCL Annual dosage (BMCL):
    - write the MCL header record (if not done yet)
    - build the new Check Sampling Period Dates (CSPD's) for Federal (and State)
    - create the VIFI MCL Violation Report Record
    - create the VIF Tran records (TR00, TR01, TR02)
  - Qtr Beta Avg Value ≤ BMCL:
    - PWS not in MCL violation
    - Blank out CSPD's

- Flag the Spls to be copied to the SAF

- Scan UFC's
  - flag all samples in the CPA to be copied to the SAF
  - assign SAF sample key (date only) to all samples in the CPA
  - check the Sample Date of each CPA sample
  - Sample Date ≤ date of First-consec-quarter and beginning Date of quarter for First-consec-quarter + Reqd-num-spls
    - set UFC to 'B'
  - Sample Date ≥ date of First-consec-quarter
    - set UFC to 'B'
    - set SSC to '4'
  - Sample Date ≥ Beginning Date of quarter for First-consec-quarter + Reqd-num-spls
    - set UFC to 'B'
    - set SSC to '4'

* CHECK SPECIAL MONITORING unless Violation-flag = 2

- EXIT to SPLG VIOL PROCESSING

***Note: CSPD's are built as follows:
- CSPD Start Date = Sample Date of Last Sample Processed
- CSPD End Date = CSPD Start Date + Viol-freq (from the ICT)

Appendix E.6

SPLG_VIOL_PROCESSING

- Check SAMPLING-FLAG
- Num Missing Spls = 0
  - No Man-made Radionuclide Sampling Violations
  - EXIT
- Num Missing Spls> 0
  - Man-made Radionuclide Sampling Violation Identified
  - Check Rqlr-Splg-Warning Switch
  - Rqlr-Splg-Warning Switch on
    - Produce message "Man-made Radionuclide samples missing within the period XX/XX/XX to XX/XX/XX for PWS XXXXXXX" on the Warnings Report
  - Rqlr-Splg-Warning Switch off
    - Create VIFI-R-REPT-RECORD using SAMPLING-FLAG for number of samples in violation
    - Create Sampling Violation Transaction for the VIF
    - Depending on Violation-flag, use FP or SP for Federal or State regulaticns viclated and create 2 records if violation-flag = 3
    - EXIT

Appendix E.6

Set RSPD's

```
-   Check Violation-flag
-   Violation-flag = 1 or 3
    -    State RSPD's to be set (if NOGO-FLAG is off)(& Fed RSPD's if
    -    check for State SPLG VE ARRAY record                  flag = 3)
    -    no State SPLG VE ARRAY record
         -    turn off Rglr-Splg-Warning Switch
         -    no State Sampling V&E in effect
         -    if NOGO-FLAG is on (and SPECIAL-MONITORING flag is
              off)*, EXIT
         -    If NOGO-FLAG is on and SPECIAL-MCNITORING flag is
              on, EXIT
         -    set the new State RSPD's fcr Cont-ID=4100
              -    check the State CSPD's for Cont-ID=4100
              -    CSPD's "blank"
                   -    new State RSPD Start Date=Old State RSPD
                        End Date + 1 day
                   -    new State RSPD End Date=Old State RSPD
                        End Date + State mon-freq
              -    CSPD's "non-blank"
                   -    New State RSPD Start Date=State CSPD Start
                        Date
                   -    New State RSPD End Date=State CSPD End
                        Date
              -    copy new State RSPD's to stored CSF Reccrd
                   (Cont-ID=4100)
              -    EXIT
-   State SPLG VE ARRAY Record found
         -    check End Date of State SPLG VE ARRAY record
         -    end date "blank"
              -    State Sampling V&E still in effect
              -    check Start Date of State SPLG VE ARRAY record
              -    State SPLG VE ARRAY record Start Date
                   -    State RSPD Start Date
                        -    if NOGO-FLAG is on (and SPECIAL-
                             MONITORING flag is off)*, EXIT
                        -    if NOGO-FLAG is on and SPECIAL-
                             MONITORING flag is on, EXIT tc Y
                        -    turn off Rglr-Splg-Warning switch
                        -    set new State RSPD's for Cont-ID=4100
                             -    check State CSPD's fcr Cont-ID=
                                  4100
                             -    CSPD's "blank"
                                  -    new State RSPD Start Date
                                       =Old State RSPD End Date
                                       + 1 day
                                  -    new State RSPD End Date
                                       =Old State RSPD End Date +
                                       State SPLG VE ARRAY record
                             -    CSPD's "non-blank"
                                  -    new State RSPD Start Date=
                                       State CSPD Start Date
                                  -    new State RSPD End Date=
                                       State CSPD Start Date +
```

```
                    State SPLG VE ARRAY
                    record ALT-SPLG value
            -   copy new State RSPD's to stored
                CSP record
            -   EXIT
    -   State SPLG VE ARRAY record Start Date >
        State RSPD Start Date but within State
        RSPD + lag
        -   turn on Rglr-splg-warning switch
        -   transition to sampling V&E period
        -   set new RSPD's for Cont-ID=4100
            -   new State RSPD Start Date =
                State SPLG VE ARRAY record start
                date field
            -   new State RSPD End Date=New
                State RSPD Start Date + State
                SPLG VE ARRAY record ALT-SPLG
                field value minus 1 day
        -   copy new State RSPD's to stored CSP
            record
        -   EXIT
    -   State SPLG VE ARRAY record Start Date >
        State RSPD's + lag
        -   turn off Rglr-splg-warning switch
        -   set new State RSPD's for Cont-ID=4100
            -   check the State CSPD's for
                cont-ID=4100
            -   CSPD's "blank"
                -   new State RSPD Start
                    Date=Old State RSPD End
                    Date + 1 day
                -   new State RSPD End Date=
                    Old State RSPD End Date +
                    State mcn-freq
            -   CSPD's "non-blank"
                -   new State RSPD Start Date
                    = State CSPD Start Date
                -   new State RSPD End Date=
                    State CSPD End Date
            -   copy new State RSPD's to stored
                CSP Record (Cont-ID=4100)
            -   EXIT
    -   End Date < State RSPD Start Date
        -   normal Regular Sampling Processing
        -   turn off Rlgr-splg-warning switch
        -   set new State RSPD's for Cont-ID=
            4100
            -   check the State CSPD's for
                cont-ID=4100
            -   CSPD's "blank"
                -   new State RSPD Start Date=
                    Old State RSPD End Date +
                    1 day
                -   new State RSPD End Date=
                    Old State RSPD End Date +
```

```
                    State SPLG VE ARRAY
                    record ALT-SPLG value
          -    copy new State RSPD's to stored
               CSF record
          -    EXIT
-    State SPLG VE ARRAY record Start Date >
     State RSPD Start Date but within State
     RSPD + lag
     -    turn on Rglr-splg-warning switch
     -    transition to sampling V&E period
     -    set new RSPD's fcr Cont-ID=4100
          -    new State RSPD Start Date =
               State SPLG VE ARRAY record start
               date field
          -    new State RSPD End Date=New
               State RSPD Start Date + State
               SPLG VE ARRAY record ALT-SPLG
               field value minus 1 day
     -    copy new State RSPD's to stored CSP
          record
     -    EXIT
-    State SPLG VE ARRAY record Start Date >
     State RSPD's + lag
     -    turn off Rglr-splg-warning switch
     -    set new State RSPD's for Cont-ID=4100
          -    check the State CSPD's for
               cont-ID=4100
          -    CSPD's "blank"
               -    new State RSPD Start
                    Date=Old State RSPD End
                    Date + 1 day
               -    new State RSPD End Date=
                    Old State RSPD End Date +
                    State mcn-freq
          -    CSPD's "non-blank"
               -    new State RSPD Start Date
                    = State CSPD Start Date
               -    new State RSPD End Date=
                    State CSPD End Date
          -    copy new State RSPD's to stored
               CSF Record (Cont-ID=4100)
          -    EXIT
-    End Date < State RSPD Start Date
     -    normal Regular Sampling Processing
     -    turn off Rlgr-splg-warning switch
     -    set new State RSPD's for Cont-ID=
          4100
          -    check the State CSPD's for
               cont-ID=4100
          -    CSPD's "blank"
               -    new State RSPD Start Date=
                    Old State RSPD End Date +
                    1 day
               -    new State RSPD End Date=
                    Old State RSPD End Date +
```

```
                    State mon-freq
            -   CSPD's "non-blank"
                -   new State RSPD Start Date=
                    State CSPD Start Date
                -   new State RSPD End Date=
                    State CSPD End Date
            -   copy new State RSPD's to stored
                CSF Record (Cont-ID=4100)
            -   EXIT
        -   End Date within State RSPD's
        -   turn on Rglr-Splg-Warning switch
        -   transition to Normal Sampling Period
        -   set new RSPD's fcr cont-ID=4100
            -   new State RSPD Start Date=State
                SPLG VE ARRAY record End Date +
                1 day
            -   check State CSPD's for Cont-ID
                =4100
            -   CSPD's "blank"
                -   new State RSPD End Date=
                    State SPLG VE ARRAY record
                    End Date + State mon-freq
            -   CSPD's "non-blank"
                -   new State RSPD End Date=
                    State CSPD End Date
            -   copy new State RSPD's to stored
                CSF record
            -   blank out State SPLG VE ARRAY
                record
            -   EXIT
    -   End Date within lag dates of State RSPD +
        lag
        -   turn on Rglr-Splg-Warning switch
        -   transition to Normal Sampling Period
        -   set new RSPD's fcr Cont-ID=4100
            -   check the State CSPD's for Cont-
                ID=4100
            -   CSPD's "blank"
                -   new State RSPD Start Date=
                    Old State RSPD End Date +
                    1 day
                -   new State RSPD End Date=Old
                    State RSPD End Date + State
                    mon-freq
            -   CSPD's "non-blank"
                -   new State RSPD Start Date=
                    State CSPD Start Date
                -   new State RSPD End Date=
                    State CSPD End Date
            -   copy new State RSPD's tc stored
                CSF Record (Cont-ID=4100)
        -   Blank out State SPLG VE ARRAY record
        -   EXIT
    -   End Date> State RSPD + lag
        -   turn off Rglr-splg-warning switch
```

```
-    set new State RSPD's for Cont-ID=4100
     -    check the State CSPD's for
          Cont-ID=4100
     -    CSPD's "blank"
          -    new State RSPD Start Date=
               Old State RSPD End Date +
               1 day
          -    new State RSPD End Date=Old
               State RSPD End Date +
               State mon-freq
     -    CSPD's "non-blank"
          -    new State RSPD Start Date=
               State CSPD Start Date
          -    new State RSPD End Date=
               State CSPD End Date
     -    copy new State RSPD's to stored
          CSP Record (Cont-ID=4100)
     -    blank out State SPLG VE ARRAY record
     -    EXIT
-    Violation flag = 2
     -    return to T substituting Federal for
          State when it appears in the logic.
          Those lines of logic marked with
          asterisk (*) are not used.
     -    EXIT
-    Violation flag = 3
```

Appendix E.6

* SET_MCL_CHECK_FIELD

- Load V&E information and modify frequency if PWS is in violation from the previous period
- Check the Violation-flag
- Violation-flag = 1 or 3
  - State compliance being run
  - Check if any records in the State MCL VE ARRAY
  - No records in the State MCL VE ARRAY
    - no State MCL V&E in effect
    - check State CSPD's on stored CSF record for Cont-ID=4100
    - State CSPD's "blank"
      - EXIT
    - State CSPD's "non-blank"
      - PWS was in previous State MCL Violation
      - set mon-freq-viol-freq in the State ICT
      - EXIT
  - Record(s) in the State MCL VE ARRAY
    - check the CPA Sample Date (for Cont-ID=4100) against the Start Date and End Date of each State MCL VE ARRAY record to find a matching V&E record
    - State MCL VE ARRAY record found whose dates include the CPA Sample Date
      - load the MOD-MCL field value into BMCL in the State ICT
      - EXIT
    - no State MCL VE ARRAY record found whose dates include the CPA Sample Date
      - load the State IRT BMCL into BMCL in the State ICT
      - EXIT
- Violation-flag = 2
  - same logic replacing State with Federal in the logic

Appendix E.6

```
*  PROCESS GROSS BETA SAMPLE

-    Check Num-I-Spls check field
     -    turn on Smpl-1 flag
-    Num-I-Spls check field = 00
     -    only one Gross Beta Sample per quarter
     -    set Qtr Beta-Avg-Value=Gross Beta Analysis Result
     -    turn off BETA-BAD flag
     -    EXIT
-    Num-I-Spls check field = 00
     -    more than one Gross Beta Sample per quarter may be
          required
     -    check Reqd-num-spls check field
     -    Reqd-num-spls = 1
          -    set Qtr Beta Avg Value = Gross Beta Analysis
               Result
          -    turn off Beta-BAD flag
          -    EXIT
     -    Reqd-num-spls = 1
          -    check if Gross Beta sample is the first in
               the Quarter
          -    sample is first one in given Quarter
               -    check GROSS-BETA-COUNTER
               -    GROSS-BETA-COUNTER=3
                    -    Set GROSS-BETA-CCUNTER=1
                    -    Set BETA-AVG-SUM=Gross Beta Analysis
                         Result
                    -    EXIT
               -    GROSS-BETA-COUNTER=3
                    -    Reset SSC's for Gross Beta sample in
                         prior quarter frcm '11 to 44'
                    -    turn off BETA-BAD flag
                    -    set GROSS-BETA-COUNTER=1
                    -    set BETA-AVG-SUM=Gross Beta Analysis
                         Result
                    -    EXIT
          -    sample not first one in given Quarter
               -    check month and year of Sample Date against
                    Month and year of the first Prior Sample
                    with SSC='11'
               -    Sample Date not in month following month
                    of prior sample with SSC='11'
                    -    turn on BETA-BAD flag
                    -    EXIT
               -    Sample Date is in month following month of
                    prior sample with SSC='11'
                    -    turn off BETA-BAD flag
                    -    add Gross Beta Analysis Result to
                         BETA-AVG-SUM
                    -    add 1 to GROSS-BETA-COUNTER
                    -    check GROSS-BETA-COUNTER
                    -    GROSS-BETA-COUNTER=2
                         -    EXIT
                    -    GROSS-BETA-COUNTER=3
                         -    set Quarter Array Beta-Avg-Value=
```

Appendix E.6

BETA-AVG-SUM/3
- turn on smpl-1 flag
- turn off BETA-BAD flag
- EXIT

Appendix E.6

* COMPUTE DOSAGE

- Search Major Beta Emitter Table for record with Cont-ID matching given Cont-ID
- No record found with matching Cont-ID's
  - produce message "SAMPLE WITH CONTAMINANT ID XXXX FOR PWS XXXXXXX NOT IN MAJOR BETA EMITTER TABLE" on the Warnings Report
  - Set DOSAGE=0.0
  - EXIT
- Record found with matching Cont-ID's
  - Check Analysis Result against Major Beta Emitter Table Detection Limit
  - Analysis Result > Detection Limit
    - Set DOSAGE=Analysis Result/MCL Dose Equivalent
    - EXIT
  - Analysis Result ≤ Detection Limit
    - Check Detect-limit flag
    - Detect-limit flag is off
      - set DOSAGE=Analysis Result/MCL Dose Equivalent
      - EXIT
    - Detect-limit flag is on
      - Set DOSAGE=EMITTER DETECTION LIMIT/MCL Dose Equivalent
      - EXIT

Appendix E.6

```
*     EXTEND POINTER ARRAY SCAN

      -     Initialize ext-counter to 17

      EXTEND POINTER ARRAY LOOP

      -     Loop until "ext-counter" > 26
      -     Check Cont-ID for Pointer Array Field "ext-counter"
      -     Cont-ID = "blank"
            -     EXIT
      -     Cont-ID ≠ "blank"
            -     special monitoring, include sample in MCL-SUM
            -     Check smpl-N flag in Quarter Array where N=
                  "ext-counter"
            -     Smpl-N flag is off
                  -     Return to 'EXTEND POINTER ARRAY LOOP'
            -     Smpl-N flag is on
                  * COMPUTER DOSAGE for Cont-ID
                  -     Include DOSAGE in MCL-SUM
                  -     Return to 'EXTEND POINTER ARRAY LOOP'
```

```
                PWF-STATE-CONTAMINANT-FREQ
                -    Violation condition
                -    Add 1 to Num Missing Spls
                -    Reset Dummy Sample Date=Old Dummy Sample
                     Date+stored PWF-STATE-CONTAMINANT-FREQ
                -    EXIT to B

          -     Move Dummy Record from Dummy Save Area back to
                the CPA
          -     RETURN to 'CHECK SPECIAL MONITORING'
    -     No records in the CPA with Sample type = 'X' and
          VFC=B
          -     Reset the VFC to 'B' for all CPA records with
                Sample Type  = 'X'
          -     EXIT
```

Appendix E.6

```
*    CHECK SPECIAL MONITORING

     -    Scan QUARTER ARRAY POINTER ARRAY starting with field 17
          until the first blank field is found
     -    All fields are "blank" (assumed if field 17 is blank)
          -    Turn SPECIAL-MONITORING FLAG off
          -    Scan the CPA for records with Sample Type='X' and UFC
               =B
          -    Record(s) in the CPA with Sample Type='X' and UFC=B
          -    Remove record(s) from the CPA
          -    EXIT
     -    One or more non-blank fields found
          -    Turn SPECIAL-MONITORING FLAG on
          -    Use the following for each non-blank field
          -    Store the PWF-STATE-CONTAMINANT-FREQ corresponding
               to the POINTER ARRAY field value Cont-ID
          -    Scan the CPA for a record with matching Cont-ID
               and Sample Type = 'X' (Dummy Record)
          -    Dummy Record found
               -    Copy the Dummy Record to the Dummy Save Area
               -    Set the UFC to 'S'
               -    Turn on DUMMY-FOUND flag
          -    Dummy Record not found
               -    Build a Dummy Record in the Dummy Save Area
                    using a Cont-ID, stored PWS-ID, Sample Type =
                    'X' Sample Date = Current Date and VFC='S'
               -    Turn off DUMMY-FOUND flag
          -    Check the Quarter Array Smpl-N flag
          -    Smpl-N flag on
               -    Check CPA Sample Date against Dummy Save
                    Area Sample Date
               -    CPA Sample Date < Dummy Sample Date + stored
                    PWF-STATE-CONTAMINANT-FREQ but > Dummy
                    Sample Date
                    -    Special Sample found, not in violation
                    -    Flag CPA Sample to be copied to the SAF
                    -    Reset Dummy Sample Date to CPA Sample Date
                    -    Move Dummy Record from Dummy Save Area to
                         the CPA
                    -    Return to 'CHECK SPECIAL MONITORING'
               -    CPA Sample Date > Dummy Sample Date + stored PWF-
                    STATE-CONTAMINANT-FREQ
                    -    Special Sample found, is in violation
                    -    Add 1 to Num Missing Spls
                    -    Flag CPA Sample to be copied to the SAF
                    -    Reset Dummy Sample Date=Old Dummy
                         Sample Date + stored PWF-STATE-CONTAMINANT-
                         FREQ
                    -    Move Dummy Record from Dummy Save Area to
                         the CPA
                    -    Return to 'CHECK SPECIAL MONITORING'
               -    CPA Sample Date < Dummy Sample Date
                    -    Special Sample too old to process
                    -    Set SSC = 44 for sample
                    -    Flag CPA sample to be copied to the SAF
```

- Move Dummy Record from Dummy Save Area to the CPA
- Return to 'CHECK SPECIAL MONITORING'

- Smpl-N flag off
  - Check Current Date against Dummy Sample Date
  - Current Date < Dummy Sample Date + Stored PWF-STATE-CONTAMINANT-FREQ
    - No Action
    - Move Dummy Record from Dummy Save Area to the CPA
    - Return to 'CHECK SPECIAL MONITORING'
  - Current Date > Dummy Sample Date + stored

Appendix E.6

```
*     EXTEND POINTER ARRAY

      -     Scan QUARTER ARRAY POINTER ARRAY beginning with field 17
      -     Pointer Array Cont-ID = PWF-STATE-FAC-CONTAMINANT-ID
            -     EXIT
      -     Pointer Array Cont-ID≠PWF-STATE-FAC-CONTAMINANT-ID but is
            non-blank
            -     RETURN to A
      -     Pointer Array Cont-ID = HIGH VALUES
            -     Set Pointer Array Cont-ID = PWF-STATE-FAC-CONTAMINANT-
                  ID
            -     EXIT
```

D. Federal Reporting Subsystem (FEDR)

1. General Description

The Federal Reporting Subsystem (FEDR) is a mandatory subsystem which produces two of the four files needed to meet requirements as specified in Section 142.15 of the Interim Primary Drinking Water Regulations that must be sent to EPA by states who assume primary enforcement responsibility. These include:

- Additions to the National Public Water System Inventory or any Public Water File record which was modified in the past year.

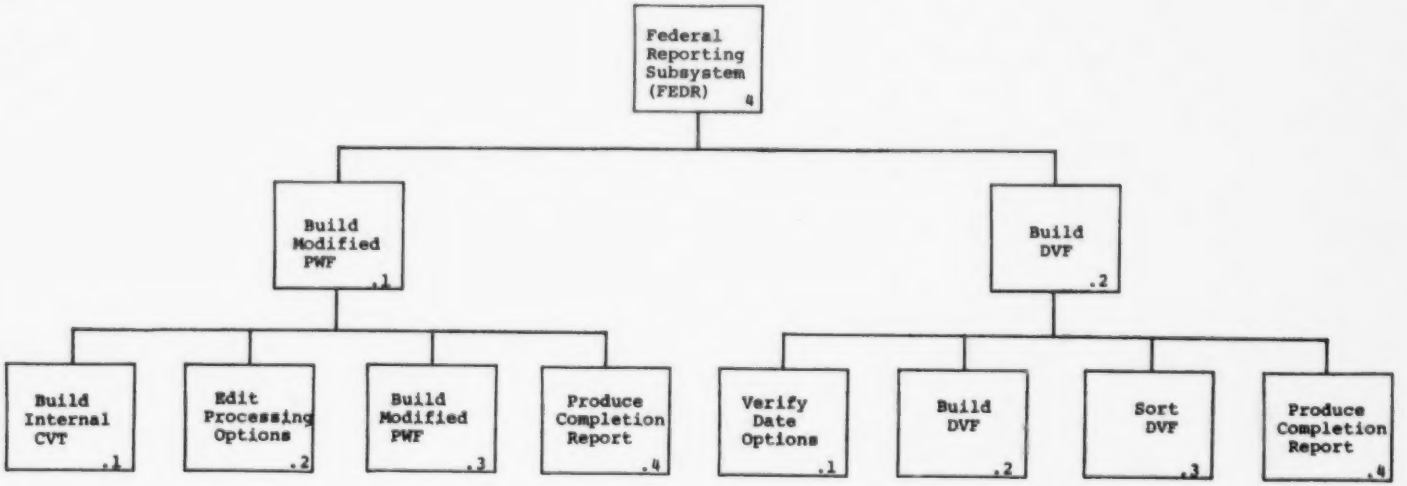
- All Federal violations of the primary drinking water regulations;

- All variances or exemptions being considered or granted by the state and the status of each of the variances and exemptions.

The purpose of the FEDR Subsystem is to retrieve data elements from the state's files, and if necessary, reformat them, and create two files for reporting to EPA. There are two modules FEDR010 and 020.

2. FEDF Visual Table of Contents

Diagram Type: VTOC
Subsystem: Federal Reporting
Diagram Number: 4
Description: Federal Reporting Subsystem VTOC



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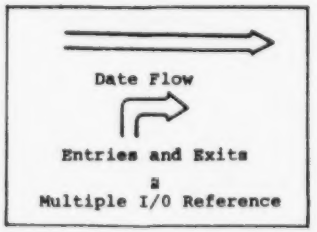

VISUAL TABLE OF CONTENTS

4 Federal Reporting Subsystem (FEDR)
4.1 Build Modified Public Water File (PWF)
4.1.1 Build Internal Code Value Table (CVT)
4.1.2 Edit Processing Options
4.1.3 Build Modified Public Water File (PWF)
4.1.4 Produce Completion Report
4.2 Build Deviations File (DVF)
4.2.1 Verify Date Options
4.2.2 Build Deviations File (DVF)
4.2.3 Sort Deviations File (DVF)
4.2.4 Produce Completion Report

3. FEDR Subsystem Overview

The features of the subsystem are:

- Batch processing of the Public Water File, Variance and Exemption File, and the Violations File which are necessary for periodic reporting to EPA.

- Output is in the format required by EPA for reporting

One of the potential benefits from implementing the subsystem is that states need not perform any special action for the annual report to EPA. Execution of the Federal Reporting Subsystem will automatically produce a Public Water File of all new or modified Public Water Systems and a file of all Federal Violations and Variances and Exemptions, unless the Variances and Exemptions Subsystem is not implemented, in which case their reporting must be done manually. This will save states using the Model State Information System the expense of preparing special summaries or input forms for EPA. And EPA will enjoy the benefit of standard formatted input files and more timely, accurate, and formatted input to its own data management system.

The process in preparing files and reports to submit to EPA is composed of the following steps:

a. Update the Violations File (VIF) with all current Violations data (module WAQC120) and produce the Compliance Summary Report (module WAQC125), selecting only those records which violate the Federal Interim Primary Drinking Water Regulations.

b. Update the Variances and Exemptions File (VEF) with all current Variances and Exemptions data (module VAEX010) and produce the Variances and Exemptions Condensed Report (modules VAEX040, VAEX041).

c. Run the Federal Reporting jobstream which will:

   1. Build the modified Public Water File (PWF) (module FEDR010).

   2. Build the Deviations File (DVF) (module FEDR020).

d. Run the following jobs which will complete the Federal Reporting Process:

   1. Produce the Public Water System Condensed Report from the modified PWF (modules PWSI020,PWSI030).

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2* Copy the Enforcement Actions File (EAF).

3* Produce the Enforcement Actions Case History Report (modules ENAC020, ENAC030).

The files that are required for reporting are then ready, together with reports of their contents. Copies of the reports which were produced in the above steps should be made available for public inspection as required by 142,15(d) of the regulations.

*Note: These steps are bypassed if the subsystem referred to is not installed.

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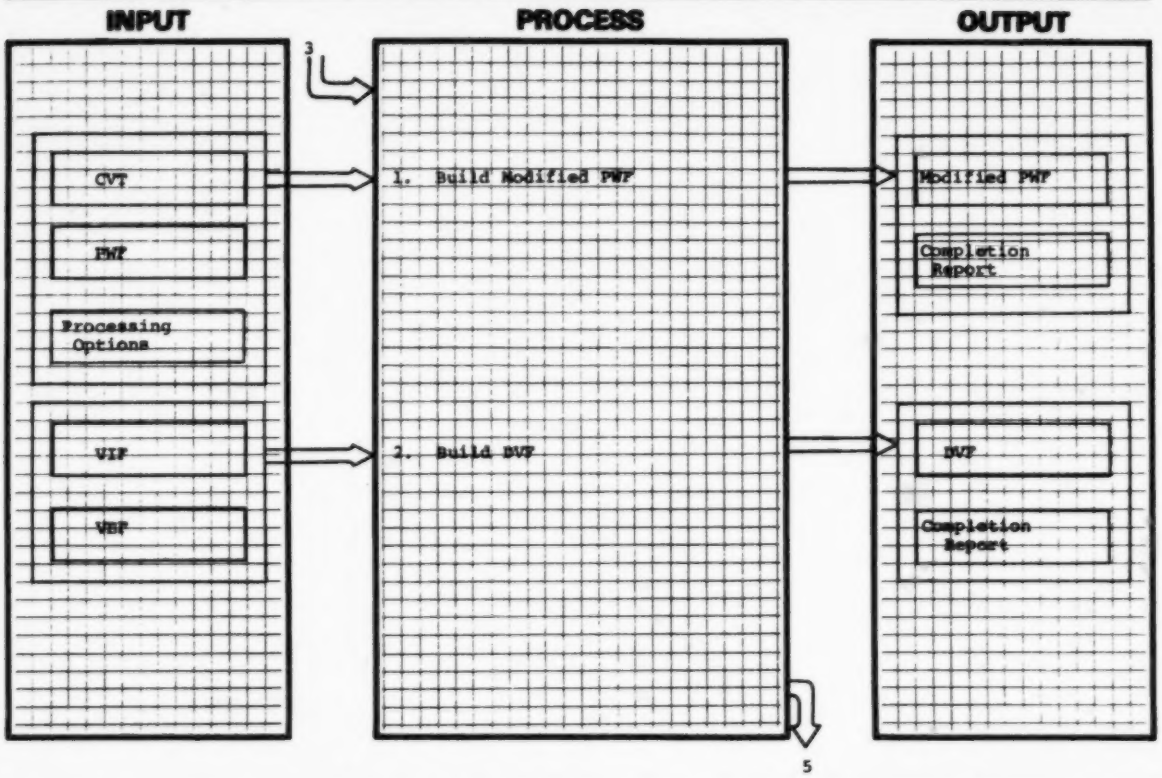
MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Federal Reporting Date: 12-13-76 Page: 1 of 1
Diagram No.: 4 Description: Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a modified Public Water File (PWF) by extracting records from the PWF which have been updated in the specified reporting period.	4.1	FEDR010	
2	Build the Deviations File (DVF), which contains information from the Violations File (VIF) and the Variances and Exemptions File (VEF).	4.2	FEDR020	

NARRATIVE

SUBSYSTEM: Federal Reporting
PROGRAM NAME: FEDR010
DATE: 1/12/77

I. OBJECTIVES:

The objective of this program is the production of the modified Public Water File (PWF) which is a file containing all PWF records created or modified in a specified reporting period.

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Code Value Table	CVT-RECORD	MSIS.206
2. Public Water File	PWF-RECORD	PWSI.200

B. PROCESSING OPTIONS RECORD:

NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1. Processing Options	DVFI-PROC-RECORD	FEDR.100	FEDR.200

C. TURNAROUND DOCUMENTS:

Not Applicable

III. OUTPUTS:

A. RECORD LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Modified PWF	PWF-RECORD	PWSI.200
2. Date Options File	DVFI-DATE-RECORD	FEDR.201

B. REPORT LAYOUTS:

NAME	EXHIBIT LAYOUT
1. Completion Report	FEDR.300 MSIS.309

C. TURNAROUND DOCUMENTS:

Not Applicable

IV. FUNCTIONS:

1. An internal Code Value Table (CVT) is built from the common CVT. It is only used to edit the postal state abbreviation entered on the Processing Options record.

2. The Processing Options are read and verified. The "PROC" record contains the current date, the reporting period, and postal state code. If the current date or postal state code is invalid, if no "PROC" records exist, or if multiple "PROC" records exist, error messages will be produced on the Completion Report and processing will be terminated. In addition, the Date Options File is built, which is used to pass the Processing Options to module FEDR020.

3. The modified Public Water File (PWF) is built by selecting PWF records which were created or modified during the specified reporting period.

4. The Completion Report is produced, showing the number of records on the PWF and the number of records selected for the modified PWF. If there were any errors on the "PROC" record, they will appear instead of or along with the aforementioned counts.

V. ASSOCIATED DOCUMENTS:

A. DATA ENTRY AND KEYPUNCH INSTRUCTIONS:

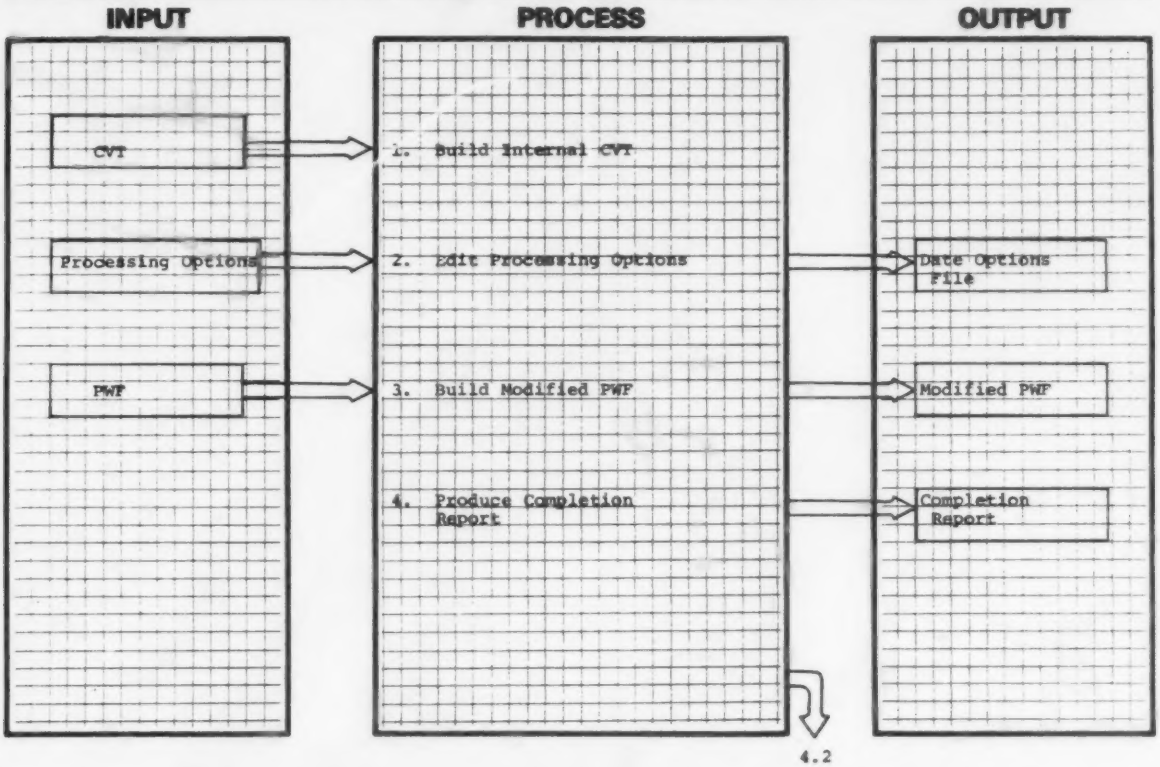
1. Processing Options

B. DATA ELEMENT DESCRIPTIONS:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Federal Reporting **Date:** 1-19-77 **Page:** 1 of 1
Diagram No.: 4.1 **Description:** Build Modified PWF

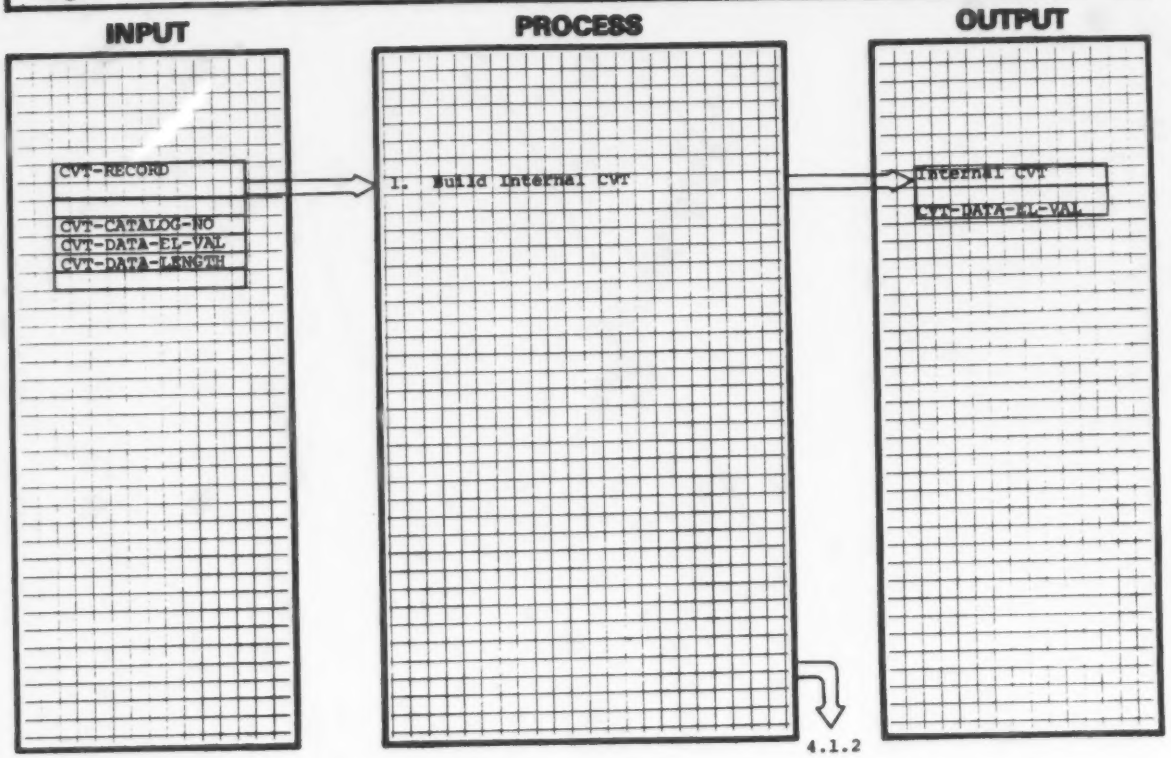


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Internal Code Value Table (CVT) from the common (MS) CVT to be used in editing the processing options.	4.1.1	FEDR010	
2	Edit the Processing Options from the "PROC" record and build the Date Options File, used to communicate the processing options to module FEDR020.	4.1.2	FEDR010	
3	Build a modified Public Water File (PWF) by selecting those PWF records which have been created or modified within the reporting period specified on the "PROC" record.	4.1.3	FEDR010	
4	Produce the Completion Report showing the number of records originally on the PWF and the number of records selected for the modified PWF.	4.1.4	FEDR010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Federal Reporting Date: 1-19-77 Page: 1 of 1

Diagram No.: 4.1.1 Description: Build Internal CVT

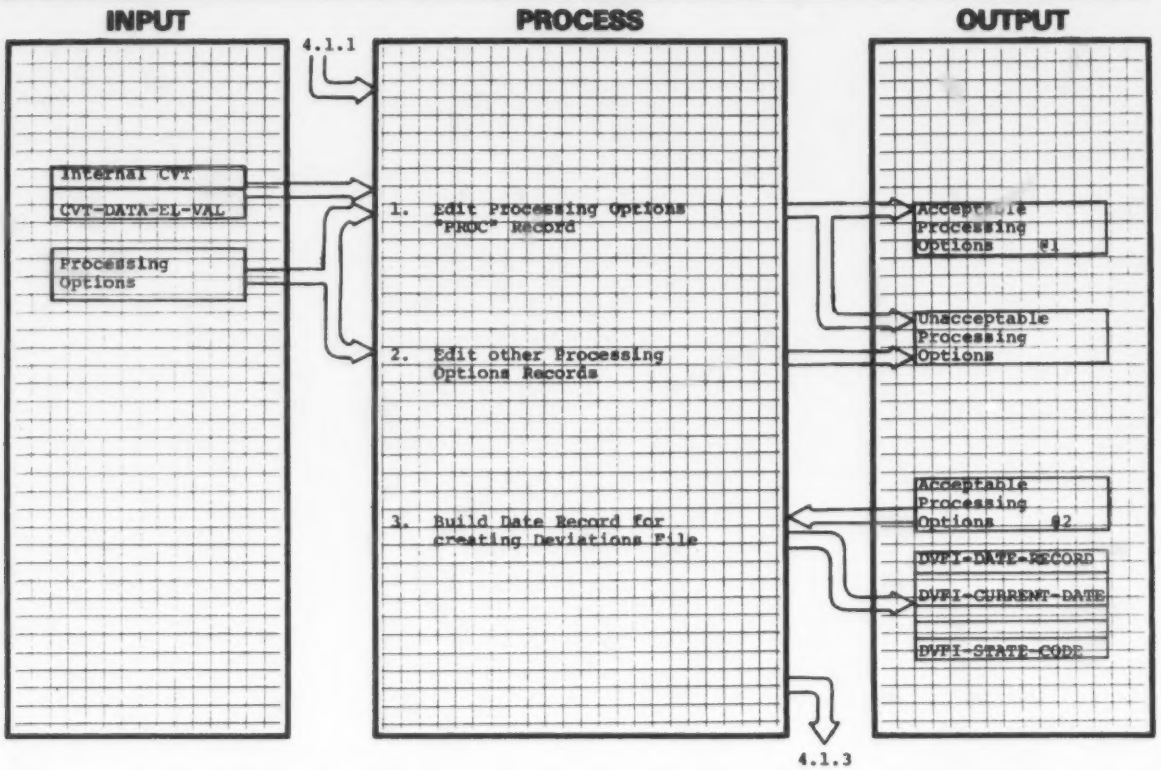


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Code Value Table (CVT) of data element values. Appropriate records are stored internally to be used for editing.		FEDR010	MSIS. 206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Federal Reporting **Date:** 1-19-77 **Page:** 1 **of** 1

Diagram No.: 4.1.2 **Description:** Edit Processing Options

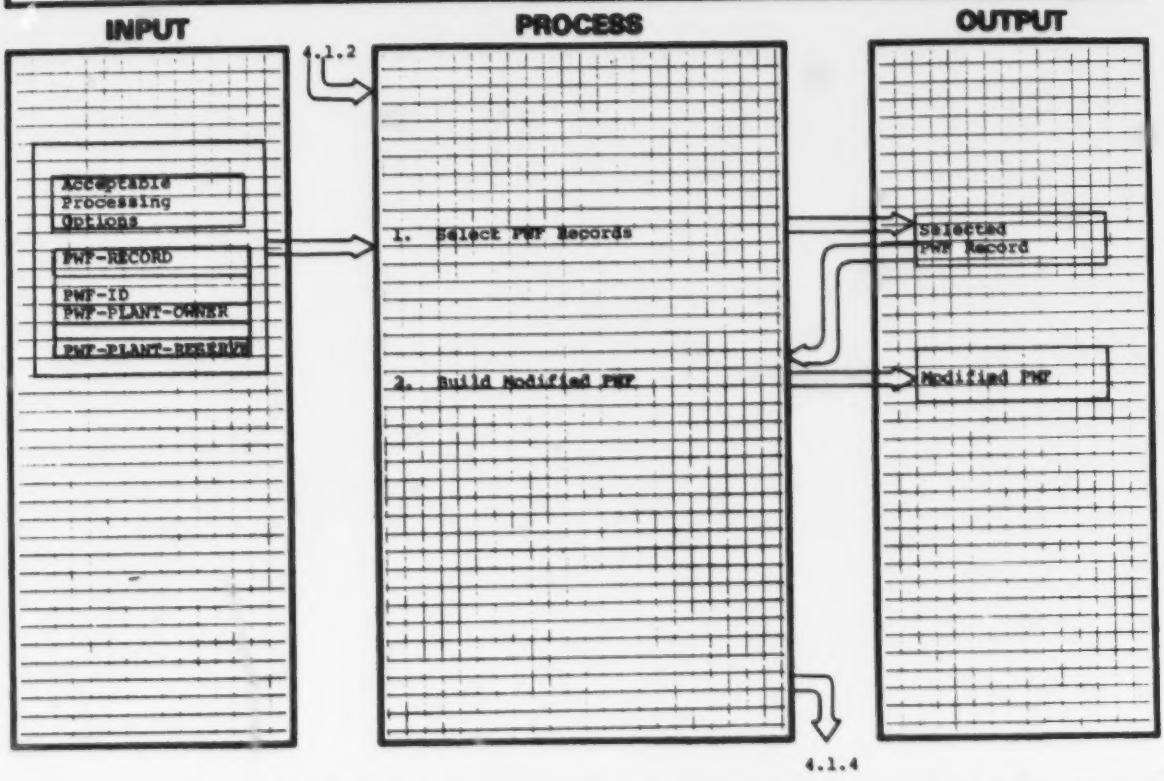


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options on the record with "PROC" in positions 1-4 as follows: a. The current date must be a valid date. b. The reporting period is checked twice (1) Both start-date and end-date must be valid dates (2) The start-date must be before the end-date c. The postal state code is edited against the Internal Code Value Table (CVT) for validity. If a or c above are invalid, if there is no "PROC" record present, or if multiple "PROC" records are present, suitable messages are produced and processing should be terminated. If b above is invalid, default to the previous year based on the current date. Finally convert reporting period dates to Julian mode.		FEDR010	100 200
2	All other Processing Options records are erroneous. A message should be produced and processing should be terminated for these Processing Options.		FEDR010	
3	Build the DVFI-DATE-RECORD which is used to pass dates and the postal state code to module FEDR020. Both Julian and calendar dates are on the record. If processing is to be terminated, use "000000" for current date, with the remainder of the record blank. NOTE: Unacceptable Processing Options and associated error messages will be written on the Completion Report (see HIPO 4.1.4)		FEDR010	201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Federal Reporting Date: 1-19-77 Page: 1 of 1

Diagram No.: 4.1.3 Description: Build Modified PWF

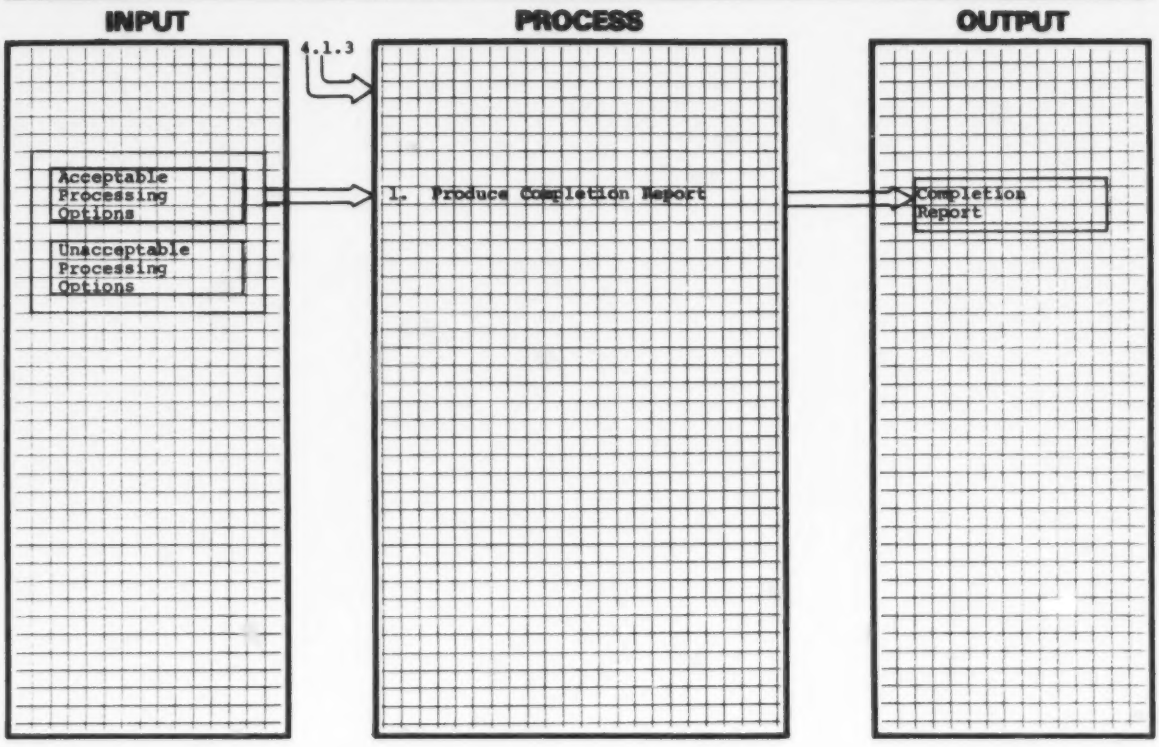


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The entire Public Water File (PWF) is scanned to select those records which had been modified in the specified reporting period. If the last update date from the PWF record falls between or on the start date and end date, it is selected.		FEDR010	PWSI. 200
2	The selected PWF records are written to the Modified PWF unaltered. When the entire PWF has been scanned, both files are closed.		FEDR010	PWSI. 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Federal Reporting Date: 1-19-77 Page: 1 of 1

Diagram No.: 4.1.4 Description: Produce Completion Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Completion Report which will show: a. Error messages for unacceptable processing options and/or b. Running sums including: (1) total number of records scanned on the Public Water File (PWF). (2) total number of records in the modified PWF expressed both as a total and a percent of (1).		FEDR010	300 MSIS. 309

NARRATIVE

SUBSYSTEM: Federal Reporting
PROGRAM NAME: FEDR020
DATE: 1/12/77

I. OBJECTIVES:

The objective of this program is the production of the Deviations File (DVF) which is a combination of information from the Violations File (VIF) and the Variances and Exemptions File (VEF).

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Date Options File	DVFI-DATE-RECORD	FEDR.201
2. Violations File	VIF-RECORD	WAOC.255
3. Variances and Exemptions File	VEF-RECORD	VAEX.212

B. PROCESSING OPTIONS RECORD:

Not Applicable

C. TURNAROUND DOCUMENTS:

Not Applicable

III. OUTPUTS:

A. RECORD LAYOUTS:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Deviations File	DVF-RECORD	FEDR.202

B. REPORT LAYOUTS:

NAME	EXHIBIT LAYOUT
1. Completion Report	FEDR.300

C. TURNAROUND DOCUMENTS:

Not Applicable

IV. FUNCTIONS:

1. The Date Options File, built by module FEDR010 to pass the Processing Options, is read and verified. If processing in FEDR010 was abnormally terminated, processing in FEDR020 is also terminated.

2. The Deviations File (DVF) is built, combining information from the Violations File (VIF) and the Variances and Exemptions File (VEF). Each DVF Record contains a condensed version of the information from a single violation, variance, or exemption.

3. The DVF is sorted by PWS-ID, Deviation Type, and Deviation ID.

4. The Completion Report is produced, showing a breakdown by origin of the total number of records processed.

V. ASSOCIATED DOCUMENTS:

A. DATA ENTRY AND KEYPUNCH INSTRUCTIONS:

Not Applicable

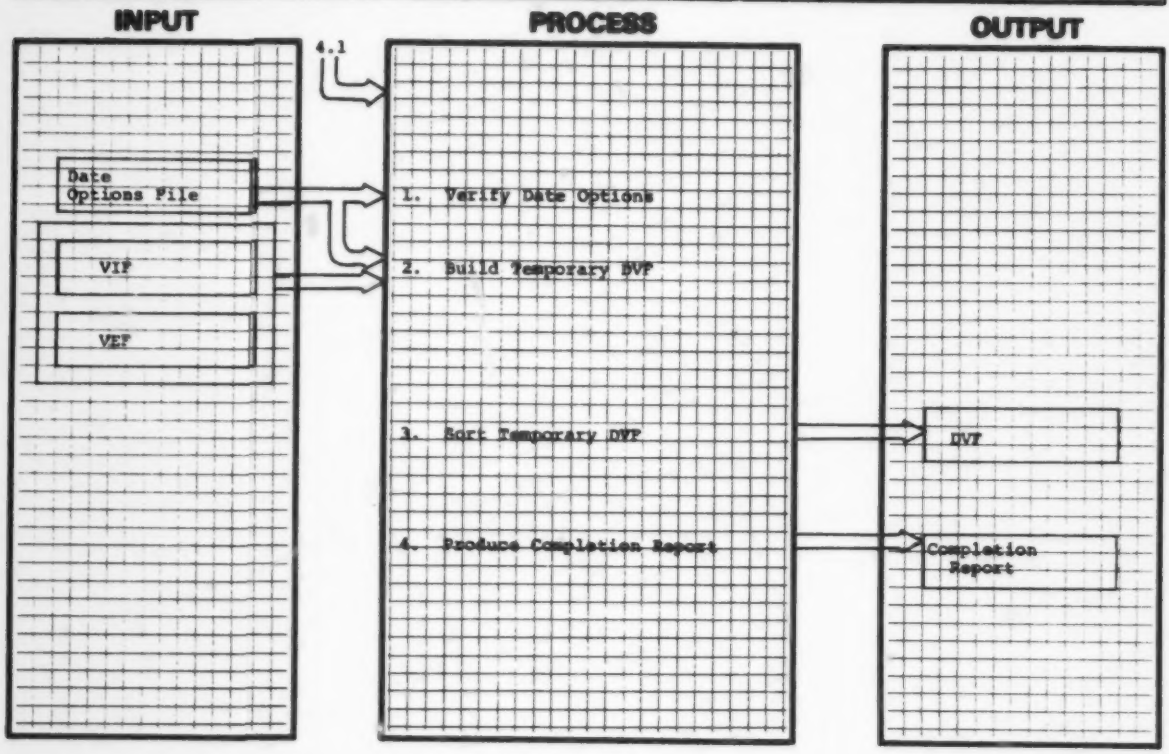
B. DATA ELEMENT DESCRIPTIONS:

1. Deviations File (DVF)

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Federal Reporting **Date:** 1-19-77 **Page:** 1 of 1

Diagram No.: 4.2 **Description:** Create Deviations File (DVF)

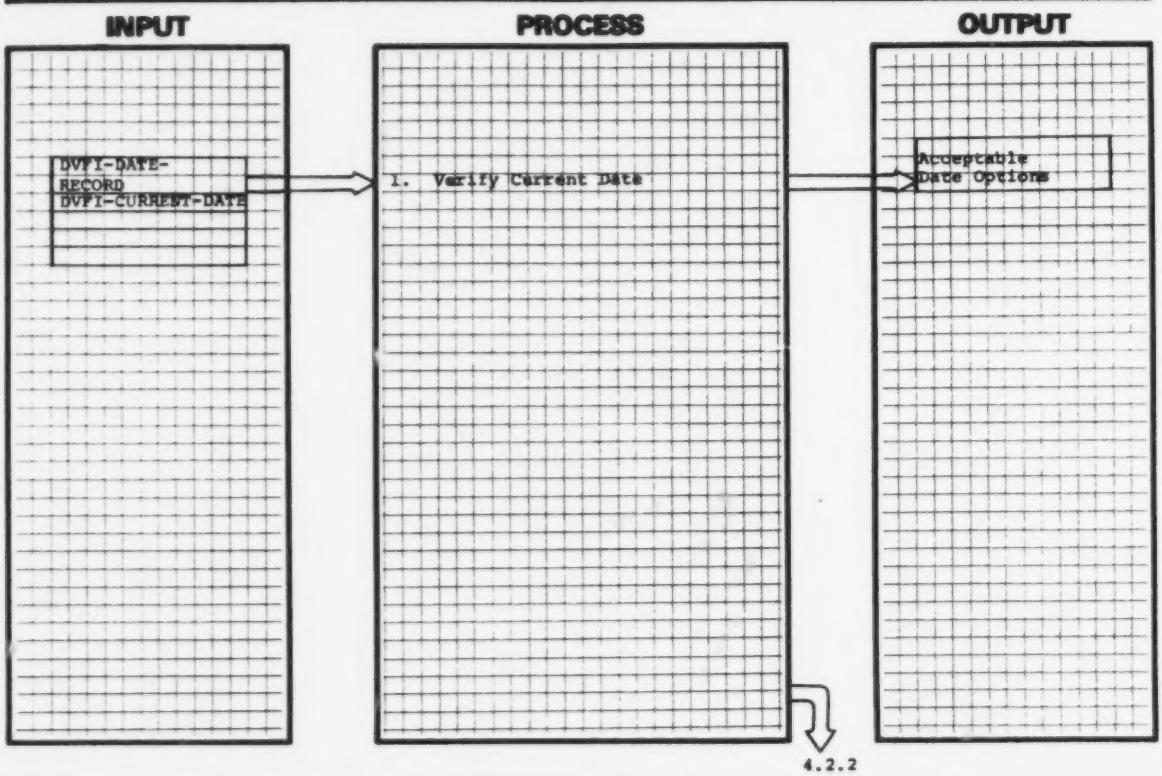


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Date Options File, built by module FEDR010 and used to communicate Processing Options, is read and verified.	4.2.1	FEDR020	
2	Build a temporary Deviations File (DVF) by utilizing information from the Violations File (VIF) and the Variances and Exemptions File (VEF).	4.2.2	FEDR020	
3	Sort the temporary DVF by: a. PWS-ID b. Deviation Type c. Deviation ID	4.2.3	FEDR020	
4	Produce the Completion Report showing the total number of records processed.	4.2.4	FEDR020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Federal Reporting Date: 1-19-77 Page: 1 of 1

Diagram No.: 4.2.1 Description: Verify Date Options

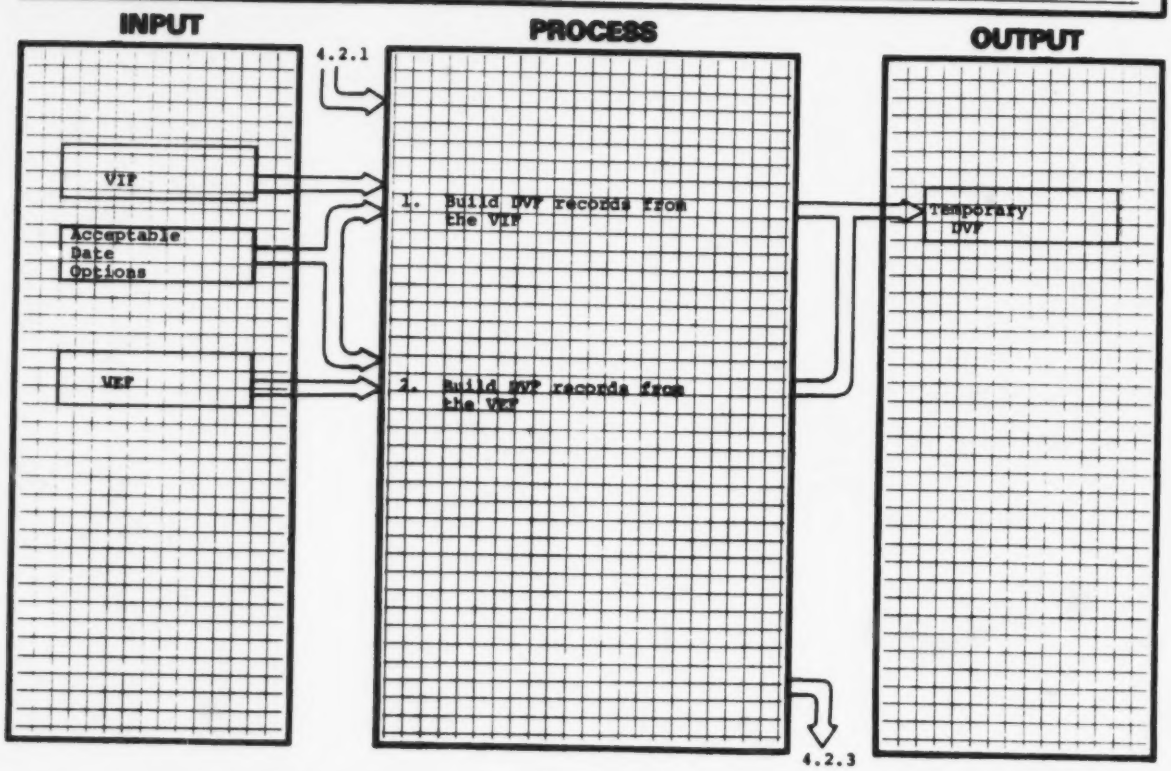


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The current calendar date on the date record is verified. If it equals '000000', there were errors in the Processing Options entered into program FEDR010 causing program termination so processing here should be terminated. For any other value of current calendar date, processing may continue.		FEDR020	201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Federal Reporting Date: 1-19-77 Page: 1 of 1

Diagram No.: 4.2.2 Description: Build Temporary DVF

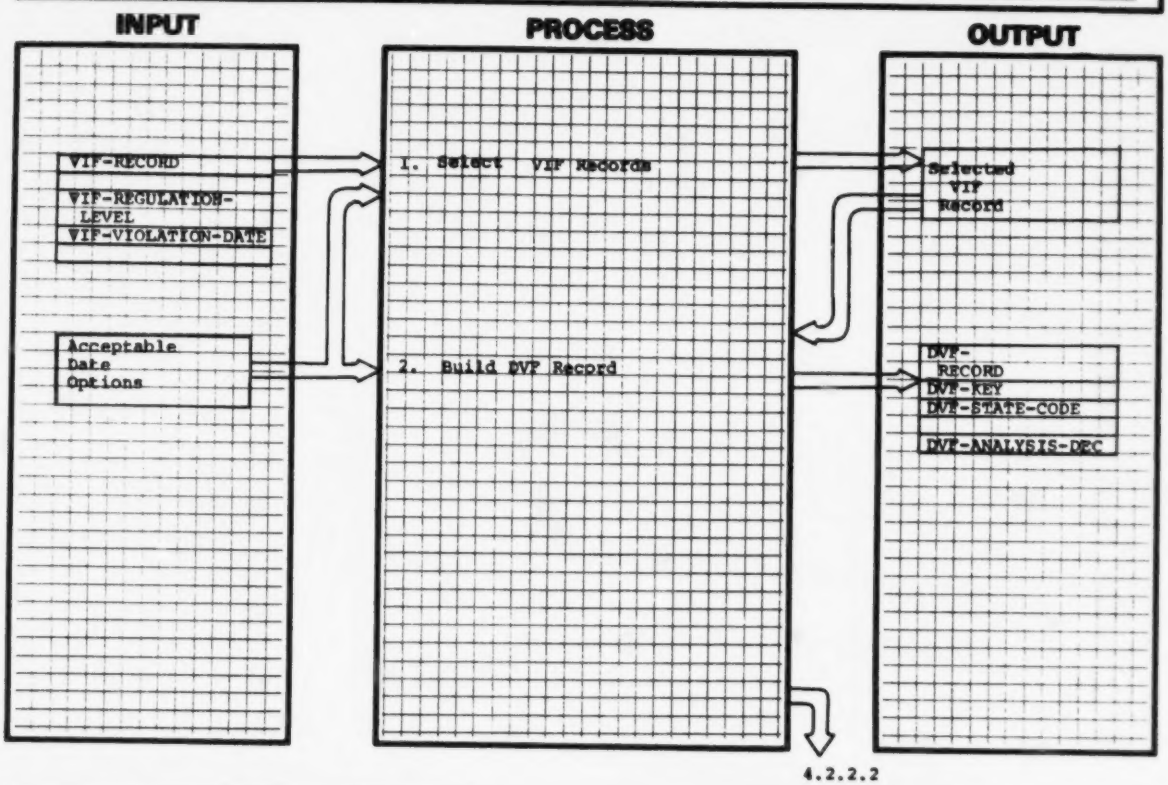


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build Deviations File (DVF) records from the Violations File (VIF). Only records associated with violations of Federal Primary Regulations will be used.	4.2.2.1	FEDR020	
2	Build DVF records from the Variances and Exemptions File (VEF). Since the Variances and Exemptions (VAEX) subsystem is optional, this step is bypassed if VAEX has not been installed.	4.2.2.2	FEDR020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Federal Reporting Date: 1-19-77 Page: 1 of 1

Diagram No.: 4.2.2.1 Description: Build DVF records from the VIF

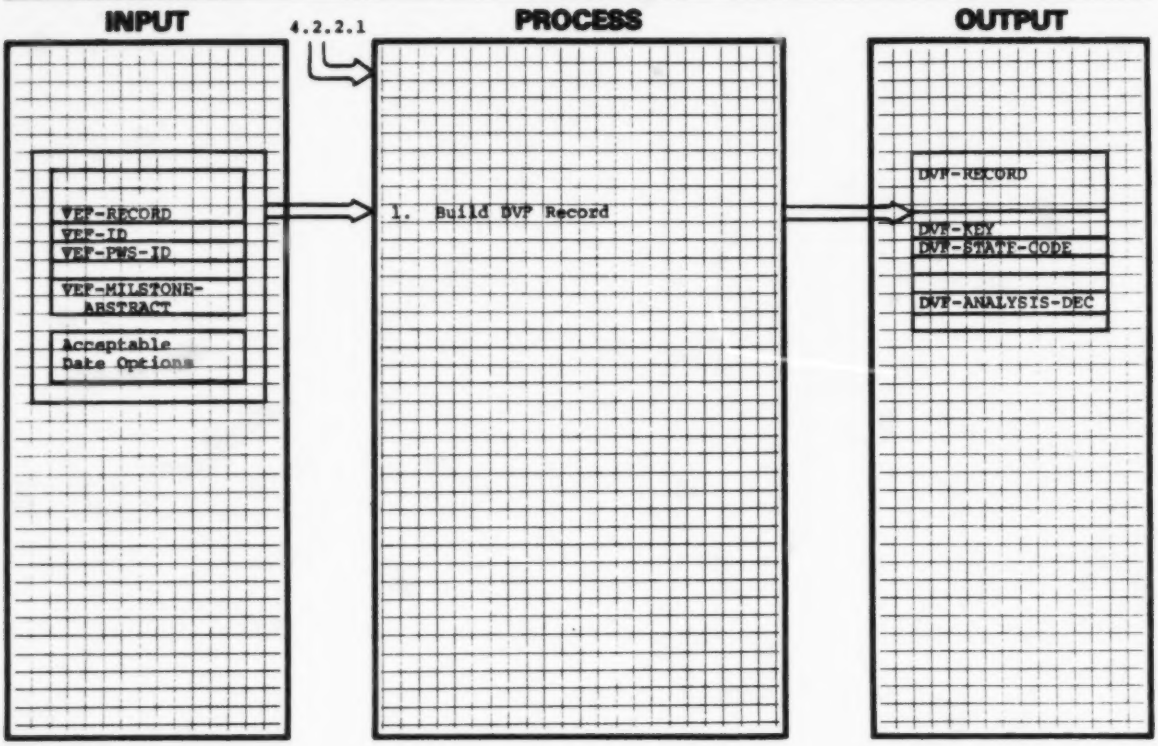


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The entire Violations File (VIF) is scanned and records are selected to be included in the Deviations File (DVF) only if the VIF record is associated with a violation of Federal Primary Regulations (VIP-REGULATION-LEVEL = 'FP'), occurring within the reporting period.		FEDR020	WAQC. 255
2	For each VIF record selected, a DVF record is built. The state code is obtained from the DVFI-DATE-RECORD. For those elements on the DVF associated with Variances or Exemptions, use blanks for alphanumeric elements and zeros for numeric elements.		FEDR020	201 202 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Federal Reporting **Date:** 1-19-77 **Page:** 1 of 1

Diagram No.: 4.2.2.2 **Description:** Build DVF Records from the VEF

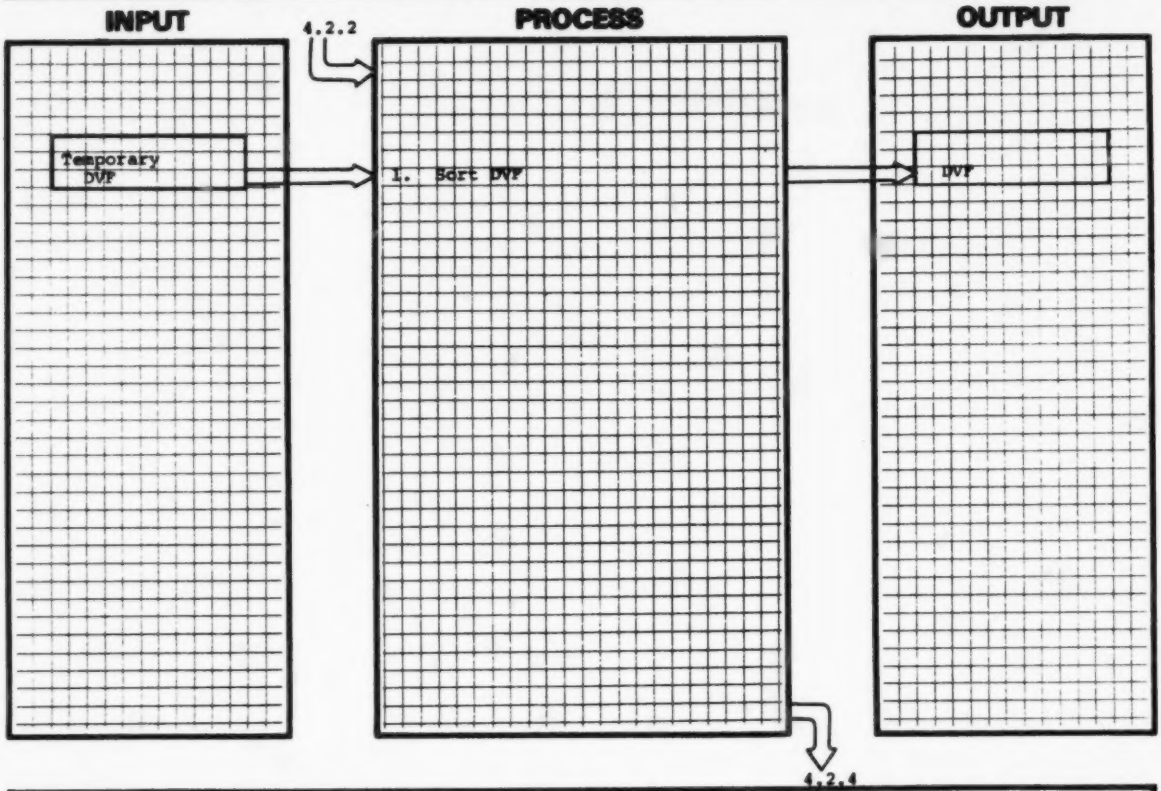


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	For each record on the Variances and Exemptions File (VEF), a Deviations File (DVF) record is built. The state code is obtained from the DVFI-DATE-RECORD (acceptable Date Options). The target date and milestone code are obtained as follows: a. There may be up to twenty milestones in the variable portion of the record, each one uniquely identified by a target date and a milestone code. b. Each milestone target date is examined to find the earliest active milestone preceeding the end of the reporting period. A milestone is defined as active if its associated attained date equals zero and it has not been deleted (milestone delay code ≠ "Z"). c. If there are no milestones in the VEF record, or if all active milestone target dates exceed the end date of the reporting period, use zeros for DVF-TARGET-DATE and blanks for DVF-MILESTONE code. For those elements on the DVF associated with Violations, use blanks for alphanumeric elements and zeros for numeric elements.		FEDR020	201 202 VAEX. 212 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Federal Reporting Date: 1-19-77 Page: 1 of 1

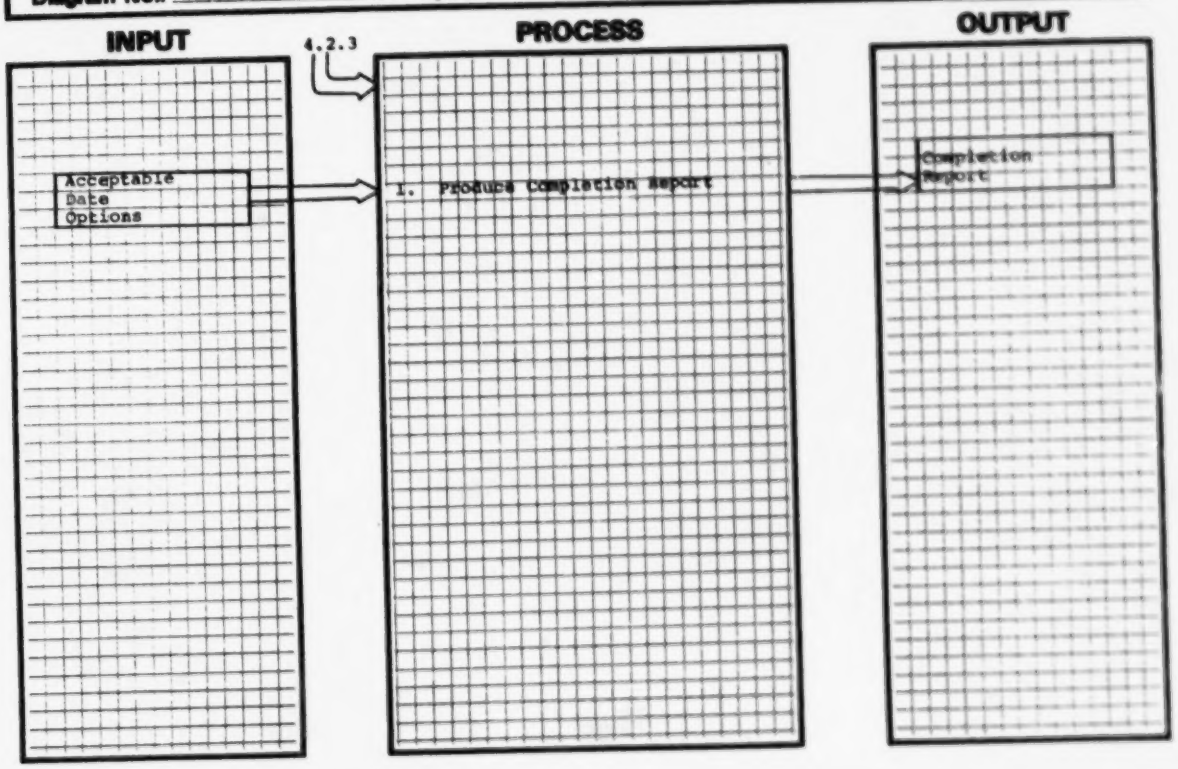
Diagram No.: 4.2.3 Description: Sort Temporary DVF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Deviations File (DVF) is sorted in ascending sequence using DVF-KEY as the sort key. DVF-KEY is composed of: a. PWS-ID b. Deviation type c. Deviation ID When sorted, all deviations will be in order by PWS ID, with Violations before Variances and Variances before Exemptions with each type in order by their unique Deviation ID.		FEDR020	202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Federal Reporting **Date:** 1-19-77 **Page:** 1 of 1
Diagram No.: 4.2.4 **Description:** Produce Completion Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Completion Report is produced showing the following running sums accumulated while building the Deviations File (DVF): a. Number of Violations File (VIF) Records scanned. b. Number of VIF Records on the DVF. c. Number of Variances and Exemptions File (VEF) Records on the DVF. d. Total Number of DVF Records created. If processing was to be terminated due to invalid processing options entered into module FEDR010, this report is not produced.		FEDR020	300

E. Standard Processing Subsystem (MSIS)

1. General Description

The Standard Processing Subsystem (MSIS) is a mandatory utility subsystem. It provides all of the other subsystems except Federal Reporting (FEDR) and Sanitary Survey (SRVY) subsystems, with edit criteria and error processing. It provides a history file for Enforcement Actions (ENAC), Operator and Mailing (OPER), Variances and Exemptions (VAEX), and Violations File (VIF) from Water Quality Compliance (WQC).

2. MSIS Visual Table of Contents

Standard Processing Subsystem 9
Update SHF .1
Select from SHF .2
Purge SHF .3
Produce Standard Error Report .4
Build CVT DET EMT .5

VISUAL TABLE OF CONTENTS

9 Standard Processing Subsystem
9.1 Produce Standard History File (SHF)
9.2 Select Standard History File (SHF)
9.3 Purge Standard History File (SHF)
9.4 Produce Standard Error Report
9.5 Build: Code Value Table (CVT)
Data Element Table (DET)
Error Message Table (EMT)

Diagram Type: VTOC

Diagram Number: 9

Subsystem: Standard Processing

Description: Standard Processing Subsystem VTOC

3. MSIS Subsystem Overview

The major functions of the MSIS subsystem are:

- Code Value Table (CVT), Data Element Table (DET), and Error Message Table (EMT) Creation
- Error handling
- History maintenance, purge, and reporting
- History record selection and reporting

The main features of the subsystem are:

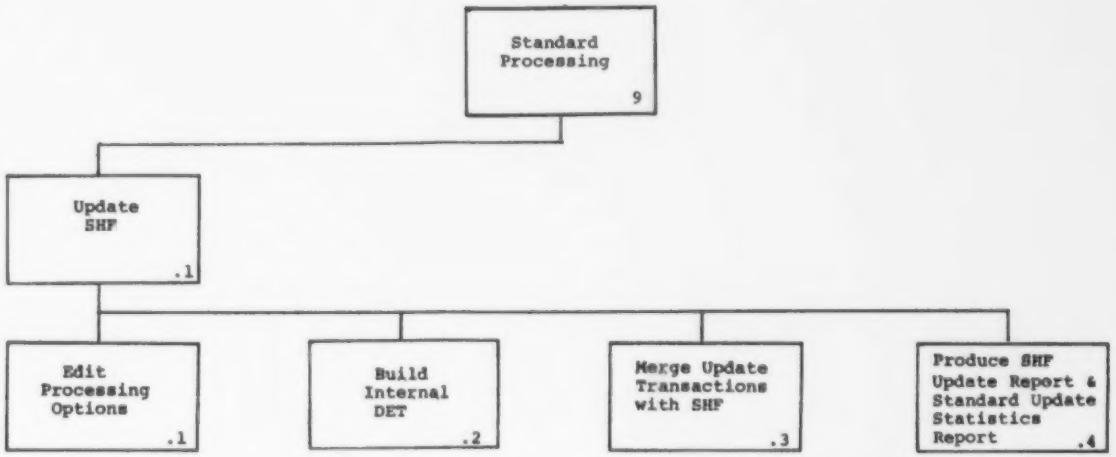
- Sequential files and tables
- Batch processing
- Flexible record selection and reporting modules

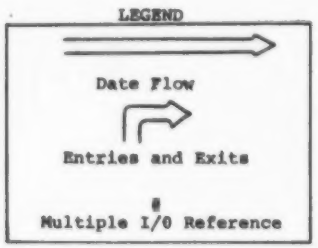
The Code Value Table (CVT), Data Element Table (DET), and Error Message Table (EMT) are created in module MSIS030 from input forms Exhibits MSIS.102, 103, 104.

The Standard Error File (SEF) is created by all subsystems except the Sanitary Survey Subsystem (SRVY) and Federal Reporting Subsystem (FEDR) and processed by the MSIS Subsystem.

The Standard History File (SHF) is created by the Water Quality Compliance Subsystem (WAQC), and the Variances and Exemptions Subsystem (VAEX), Enforcement Actions Subsystem (ENAC), and Operator and Mailing Subsystem (OPER) if used by the state or region, and is then processed by the MSIS Subsystem.

Diagram Type: VTOC
Diagram Number: 9.1
Subsystem: Standard Processing
Description: Update Standard History File (SHF)





VISUAL TABLE OF CONTENTS

9 Standard Processing
9.1 Update Standard History File (SHF)
9.1.1 Edit Processing Options
9.1.2 Build Internal Data Element Table (DET)
9.1.3 Merge Update Transactions with Standard History File (SHF)
9.1.4 Produce Standard History File (SHF) Report and Standard Update Statistics Report

NARRATIVE

SUBSYSTEM: Standard Processing
PROGRAM NAME: MSIS020
DATE: October 1, 1976

I. OBJECTIVES:

The objective of this program is to update the Standard History File (SHF) with new entries from the Violations File (VIF), the Variances and Exemptions File (VEF), the Enforcement Actions File (EAF), or the Operator and Mailing File (OMF). Two reports, the Standard History File Update Report and the Standard Update Statistics Report, are produced. The contents of these reports depends upon the Processing Options.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Standard History File	SHF-RECORD	MSIS.202
2.	SHF Purged File	SHF-T-RECORD	MSIS.213
3.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Processing Options	MSI-PROC-SHF-RECORD	MSIS.200

III. OUTPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Standard History File	SHF-RECORD	MSIS.202
2.	Standard Error File	SEF-RECORD MSI-PROC-SEF-RECORD	MSIS.207 MSIS.208

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard History Report	MSIS.301
2.	Standard Update Statistics Report	MSIS.300

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. The Processing Options are read to select which report option is desired or to specify that no report is desired. The options for report are: 1) only new update transactions, 2) all Standard History File (SHF) records within a subsystem, 3) the entire SHF file, 4) no report.

2. The Data Element Table (DET) is used to build an internal table that is a reference for whether or not the data element is to be entered into the SHF and a source for the mnemonic name for the Standard History File Update Report.

3. As each transaction is examined, the ones accepted by the DET are merged with the SHF.

4. Based on the Processing Options, the Standard History File Update Report and the Standard Update Statistics Report are produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

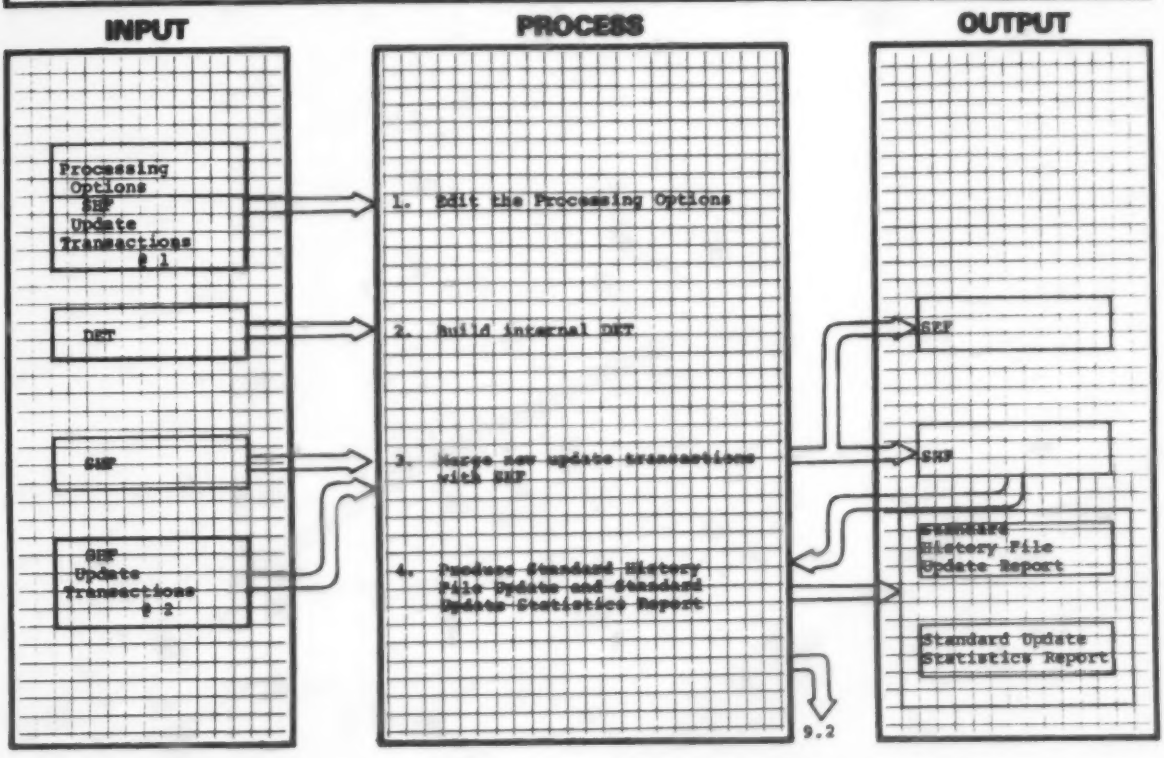
B. Data Element Description:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Standard Processing (MSIS) Date: 10-13-76 Page: 1 of 1

Diagram No.: 9.1 Description: SHF Maintenance

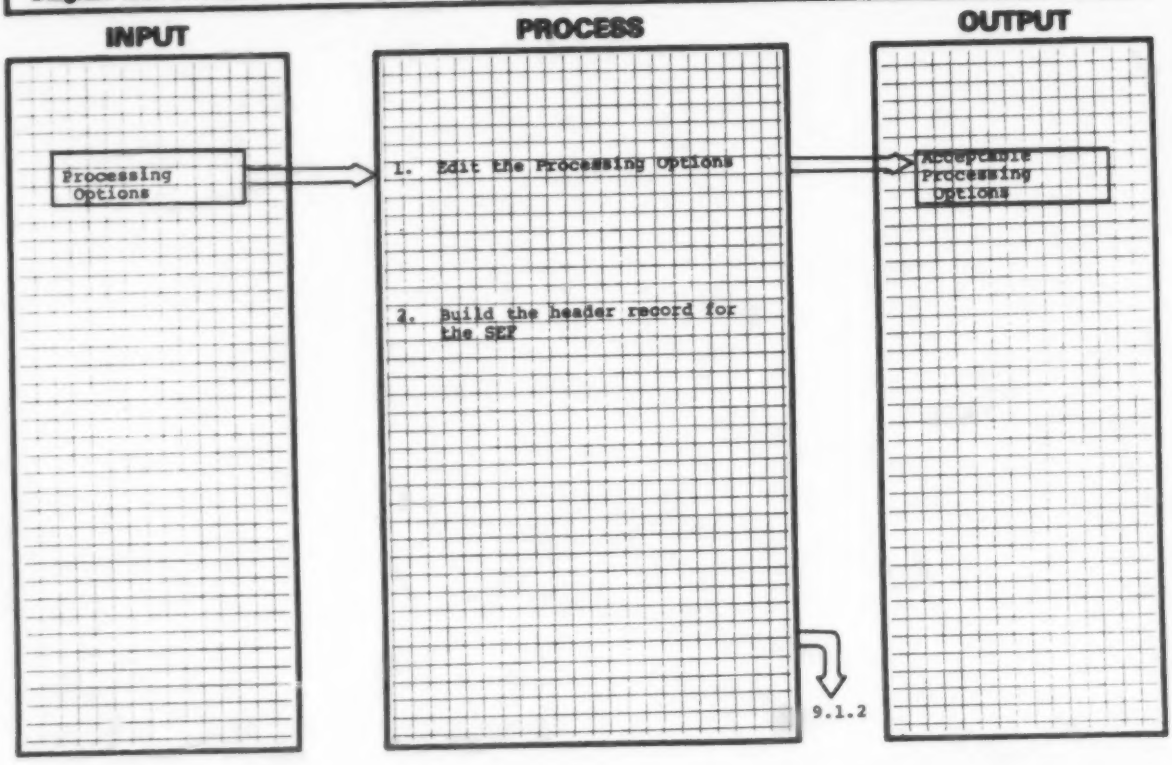


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The first record on the Standard History File (SHF) Update transactions File will contain the Processing Options. There are 4 options which determine if and how to produce the SHF Update Report.	9.1.1	MSIS020	213
2	The Data Element Table (DET) of the Violations File (VIF), Variances and Exemptions File (VEF), Enforcement Actions File (ENAC), and the Operator and Mailing File (OMF), are used to build an internal table which will contain data element catalogue number, file ID, mnemonic name, and a code to indicate if the data element should be included in the (SHF).	9.1.2	MSIS020	201
3	The appropriate data elements records, those whose associated code from DET is "Y" (yes), are merged with the (SHF). These update transactions are generated from 4 subsystems: MAQC, VAEX, ENAC, or OPER.	9.1.3	MSIS020	202
4	Depending upon which Processing Option was selected, the Standard History File Report is produced. The Standard Update Statistics Report is always produced as part of this report regardless of the Processing Option selected. Note: Error codes are located in the Data Element Dictionary (DED).	9.1.4	MSIS020	301 300

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-13-76 Page: 1 of 1

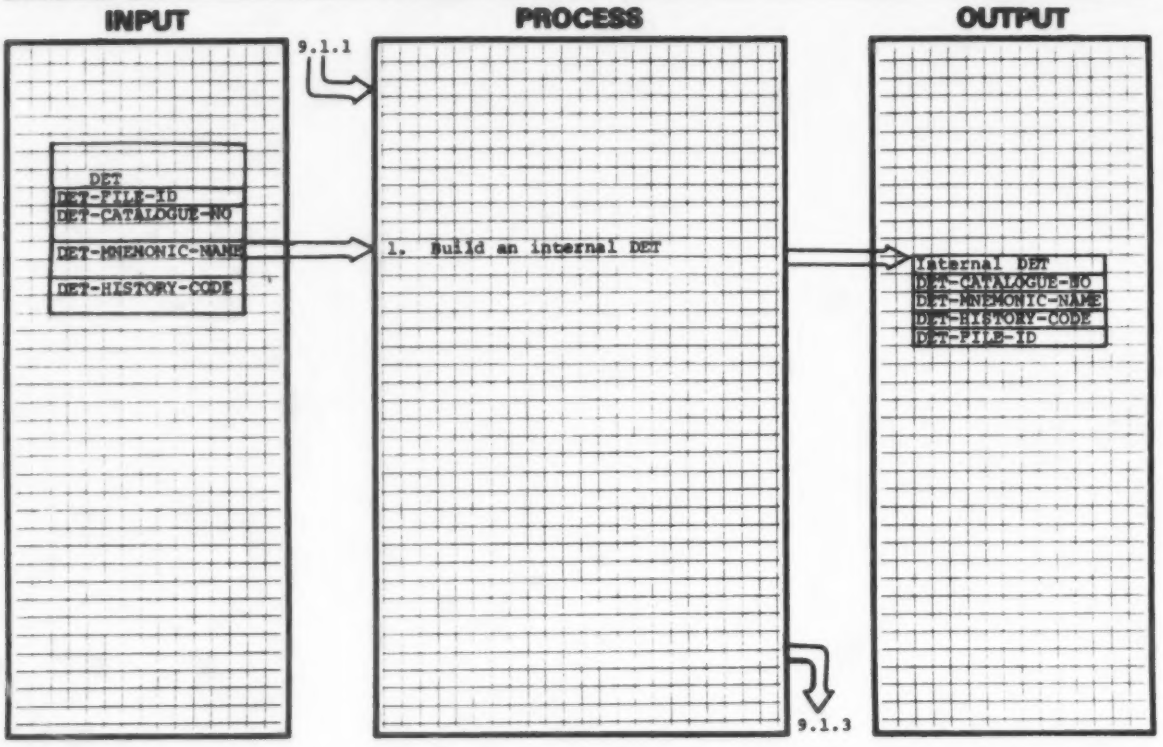
Diagram No.: 9.1.1 Description: Edit the Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The first record in the Standard History File (SHF) Update Transactions will be the Processing Options Record. This record will contain the following fields: a. Card ID - "LOW VALUES" b. Date - Use this to print a date on the (SHF) Update and Statistics Report. c. Print Report Option - Use this to determine how to print the (SHF) Update and Statistics Report. 1. Print only the new SHF records 2. Print all the SHF records with the same SH-FILE-ID as is on the Processing Options Record 3. Print the entire SHF 4. Do not print any individual SHF records d. File-ID - Use this if the second print option is selected. NOTE: If there is an error in the Print Report Option value, default to printing only the new SHF records (1.c.1). If this record has "LOW VALUES" in Card ID and the rest of the record is blank, then processing should be terminated.		MSIS020	213
2	Build the header record for the Standard Error File (SEF). The first 80 positions of this record are the same as the first 80 positions of SHF Processing Options except positions 11 and 12 always default to N's.		MSIS020	208

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-13-76 **Page:** 1 of 1
Diagram No.: 9.1.2 **Description:** Build an Internal DET

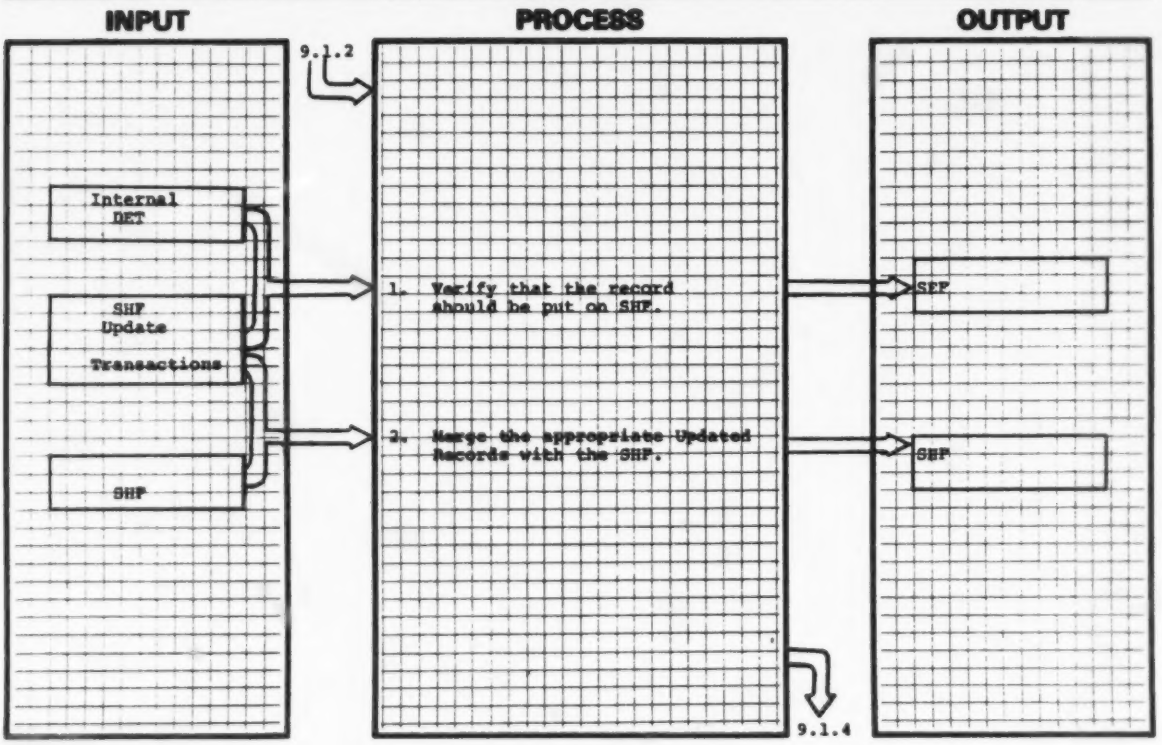


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of EA, OM, VE, and VI. Only the file ID, catalogue number, data element mnemonic, and history code are used.		MSIS020	201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-13-76 **Page:** 1 **of** 1

Diagram No.: 9.1.3 **Description:** Update the SHF

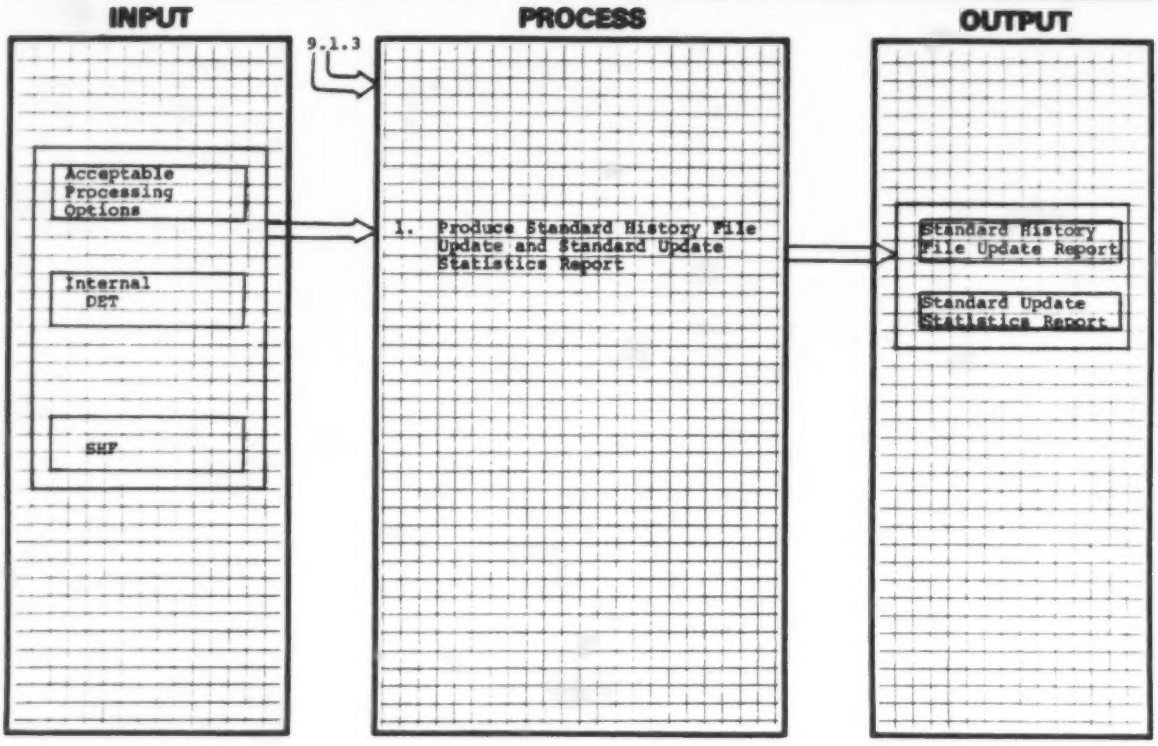


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Match the Update Transactions with the Internal Data Element Table (DET) by FILE-ID and CATALOGUE-NUMBER to see that the history code indicates the record should be on the Standard History File (SHF). If DET-HISTORY-CODE="Y", the data element is kept on SHF .		MSIS020	202
2	Merge transactions with the SHF by the following: a. SHF-FILE-ID b. SHF-RECORD-ID = record ID c. SHF-CATALOGUE-NO d. SHF-CUR-UPDATE-DATE = update date NOTE: If no matching Catalogue Number can be found on the DET, an error record is written to the Standard Error File (SEF). Assign an Error Code of 105. However, the new SHF record is merged into the SHF since there is no means of determining if it should be excluded. NOTE: If the Catalogue Number on an input transaction equals 'LOW VALUES', then the input transaction, as well as all following transactions with the same FILE-ID, is not merged into the Updated SHF and is not counted in any of the update statistics.			207

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-13-76 Page: 1 of 1

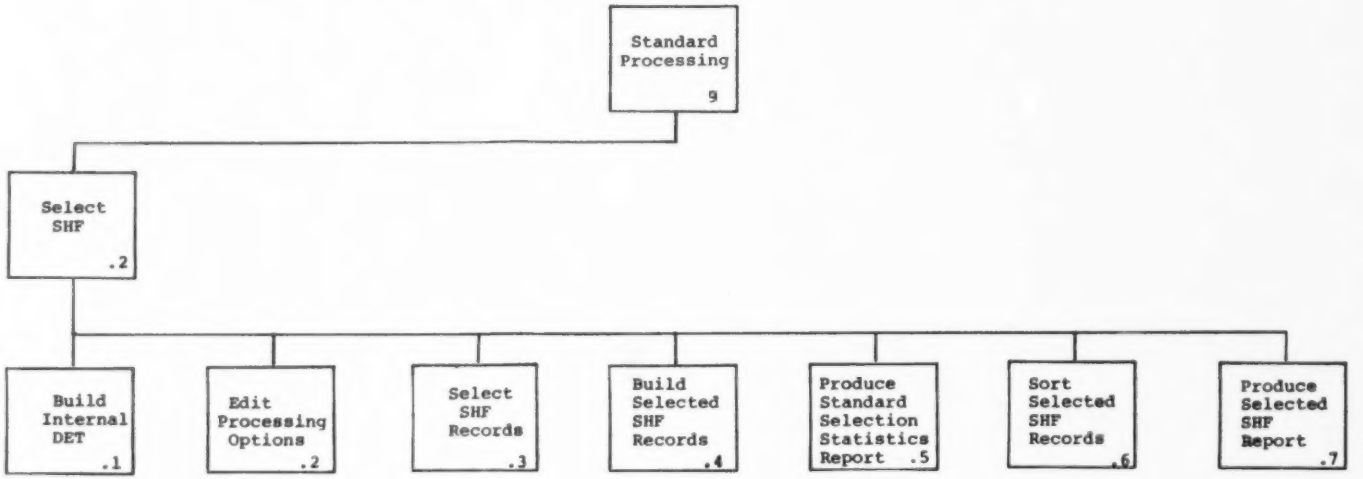
Diagram No.: 9.1.4 Description: Produce the SHF Update Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Acceptable Processing Options determine how to print the Standard History File Update Report. The Internal DET provides the data element mnemonic name, catalogue number, file ID and history code. The Standard Update Statistics Report is always produced. The following two formats may be used: a. The Standard Update Statistics Report contains: 1. Totals which were accumulated during the update process: (a) number of records originally on the file (b) number of acceptable transactions (c) number of error records created (d) number of records modified on the file (e) number of new records added to the file (f) number of records deleted from the file (g) number of records currently on the file 2. Totals d through g computed as a percent of a. b. If any Processing Options records are in error, the record and associated error messages can be produced instead of or in addition to the totals in 1.a.		MSIS020	301 300

Diagram Type: VTOC
Diagram Number: 9.2
Subsystem: Standard Processing
Description: Select Standard History File (SHF)

1024


Standard Processing 9
Select SHF .2
Build Internal DET .1
Edit Processing Options .2
Select SHF Records .3
Build Selected SHF Records .4
Produce Standard Selection Statistics Report .5
Sort Selected SHF Records .6
Produce Selected SHF Report .7

LEGEND

Date Flow

Entries and Exits

@ Multiple I/O Reference

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9 Standard Processing
9.2 Select from Standard History File (SHF)
9.2.1 Build Internal Data Element Table (DET)
9.2.2 Edit Processing Options
9.2.3 Select Standard History File (SHF) Records
9.2.4 Build Selected Standard History File (SHF) Records
9.2.5 Produce Standard Selection Statistics Report
9.2.6 Sort Selected Standard History File (SHF) Records
9.2.7 Produce the Selected Standard History File (SHF) Report

NARRATIVE

SUBSYSTEM: Standard Processing
PROGRAM NAME: MSIS040
DATE: 10/11/76

I. OBJECTIVES:

The objective of this program is to select records from the Standard History File (SHF) based on the selection criteria entered on Selection Forms. The selected records will be printed in the sequence established on the Sort forms.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Standard History File	SHF-RECORD	MSIS.202
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	MSI-PROC-RECORD	MSIS.101	MSIS.204
2.	Select-1 Options	MSI-SELECT-1-RECORD	MSIS.106	MSIS.210
3.	Select-2 Options	MSI-SELECT-2-RECORD	MSIS.107	MSIS.211
4.	Sort Options	MSI-SORT-RECORD	MSIS.108	MSIS.212

III. OUTPUTS:

A. Record Forms and Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Selection Statistics Report	MSIS.312
2.	Selected SHF Report	MSIS.309
		MSIS.307

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. The Data Element Tables (DET) are read for the Violations File (VIF), Variances and Exemptions File (VEF), Operator and Mailing File (OMF), Enforcement Actions File (EAF), and the Standard History File (SHF) and an internal table is built. This table contains information needed in performing Functions 2, 3, 4, and 7 described below.

2. There are four types of Processing Options records which are needed in the Selection Process. Each type is edited for acceptable values and those values are retained and utilized in the following functions.

3. Based on the criteria established in the Processing Options records, SHF records are examined to determine if they should be selected.

4. If an SHF record is selected, then a Selected SHF record is built. This function includes building a sort key based on the criteria established by the SORT Processing Options.

5. When the entire SHF has been examined and the Selected SHF is complete, the Standard Selection Statistics Report is produced which shows all the selection criteria and how many records were selected.

6. The Selected SHF is sorted on the sort key.

7. The Sorted Selected SHF is printed on a detailed report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

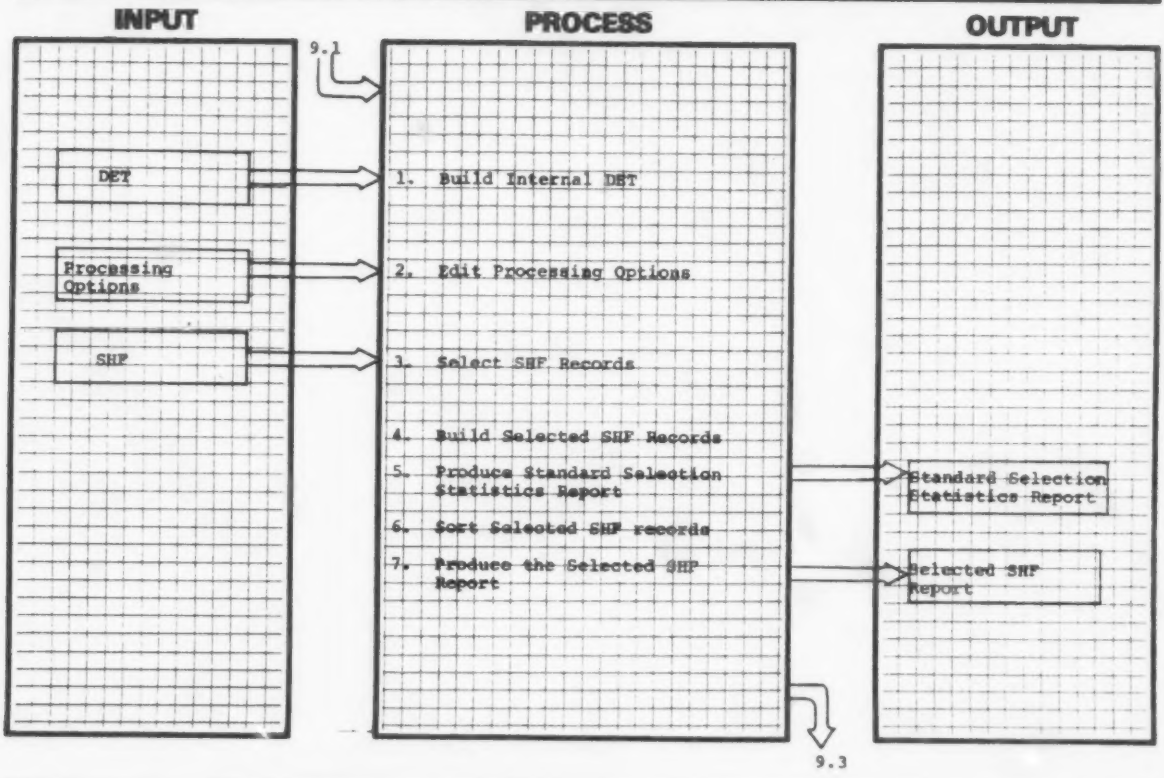
1. Processing Options
2. Selection Form - Definition of Data Elements
3. Selection Form - Definition of Logic For Selection
4. Sort Processing Options

B. Data Element Descriptions:

1. Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 of 1
Diagram No.: 9.2 **Description:** SHF Selection

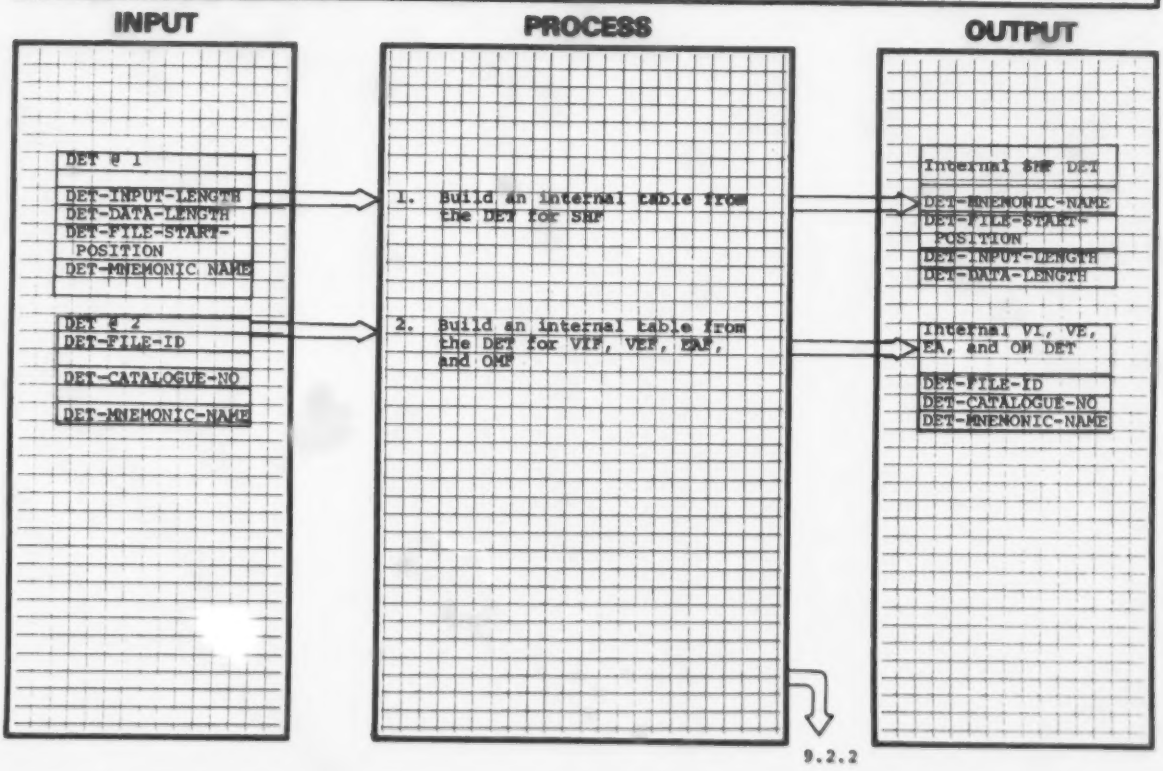


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal table of information from each record on the five Data Element Tables (DET) with the following File ID's: VI, VA, OM, EA, and SH.	9.2.1	MSIS040	
2	There are four types of Processing Options records which are needed in the Selection Process: 'PROC','SEL1', 'SEL2', and 'SORT.' They must be edited and their values kept.	9.2.2	MSIS040	
3	Using the criteria established in the Processing Options records, Standard History File (SHF) records are examined to see if they should be selected.	9.2.3	MSIS040	
4	If a (SHF) record is selected, then a Selected (SHF) record is built with a sort key.	9.2.4	MSIS040	
5	When the entire (SHF) has been examined, a Selection Statistics Report is produced which shows all the selection criteria and how many records were selected.	9.2.5	MSIS040	
6	The Selected (SHF) is sorted according to criteria in the Processing Options.	9.2.6	MSIS040	
7	The Sorted Selected SHF is printed on the Selected SHF Report.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 of 1

Diagram No.: 9.2.1 **Description:** Build Internal DET

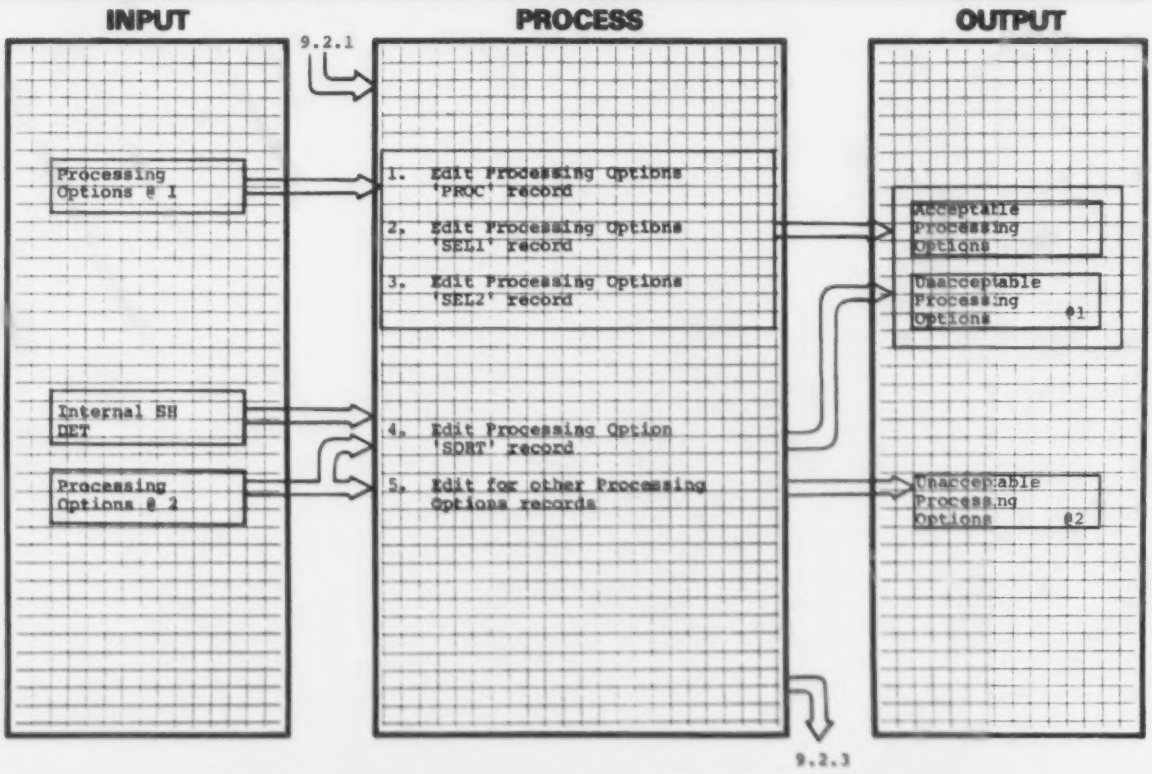


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of SH. Only the file start position, data element length, input length, and data element mnemonic are used.		MSIS040	201 DED
2	An internal Data Element Table (DET) is built from the DET with all records having file ID's of VI, VE, EA, and OM. Only the file ID, catalogue numbers, and data element mnemonic are used.		MSIS040	201 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 of 1

Diagram No.: 9.2.2 **Description:** Edit Processing Options

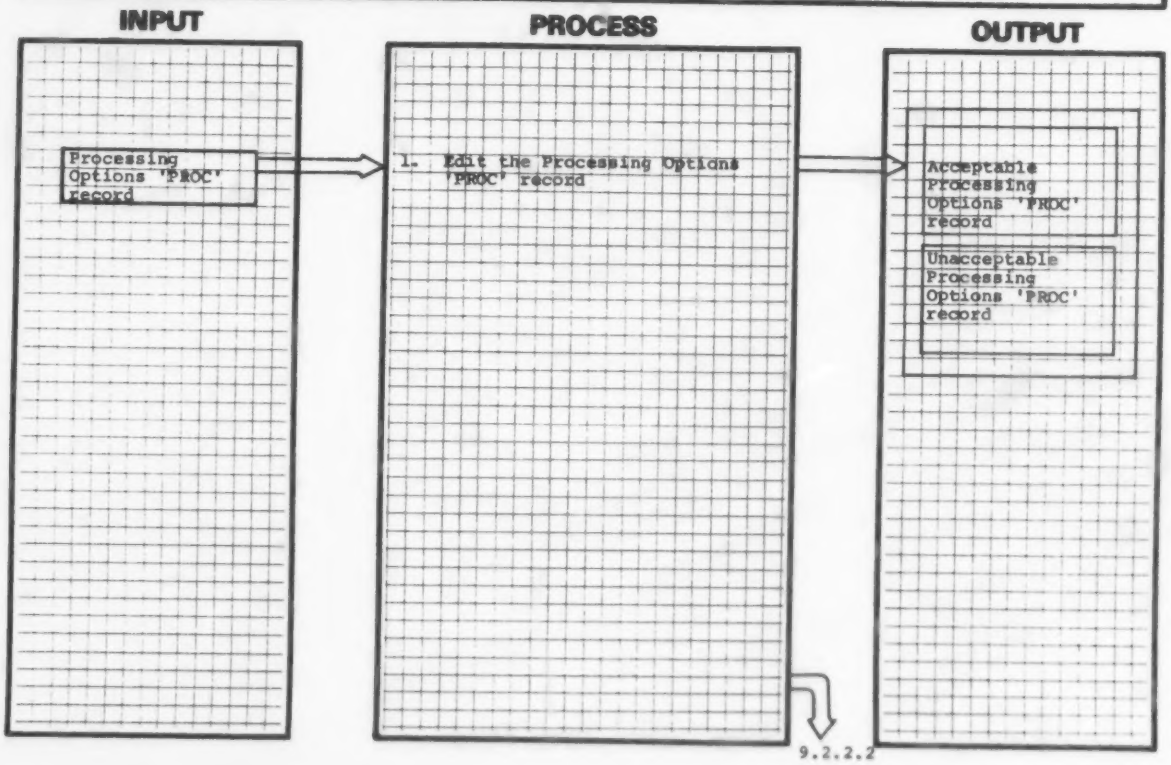


STEP	EXTENDED DESCRIPTION	REFERNCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record which has 'PROC' in the first 4 positions of the record.	9.2.2.1	MIS040	
2	Edit the Processing Options record(s) which have 'SEL1' in the first 4 positions of the record.	9.2.2.2	MIS040	
3	Edit the Processing Options record(s) which have 'SEL2' in the first 4 positions of the record.	9.2.2.3	MIS040	
4	Edit the Processing Options record(s) which have 'SORT' in the first 4 positions of the record.	9.2.2.4	MIS040	
5	If the Processing Options record does not fall into one of the above categories, then it is an invalid record and should be shown on one of the Standard Selection Statistics Reports as being in error. NOTE: If any of the Processing Options besides date (PROC record) are in error, processing is terminated.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 of 1

Diagram No.: 9.2.2.1 **Description:** Edit Processing Options 'PROC' Record

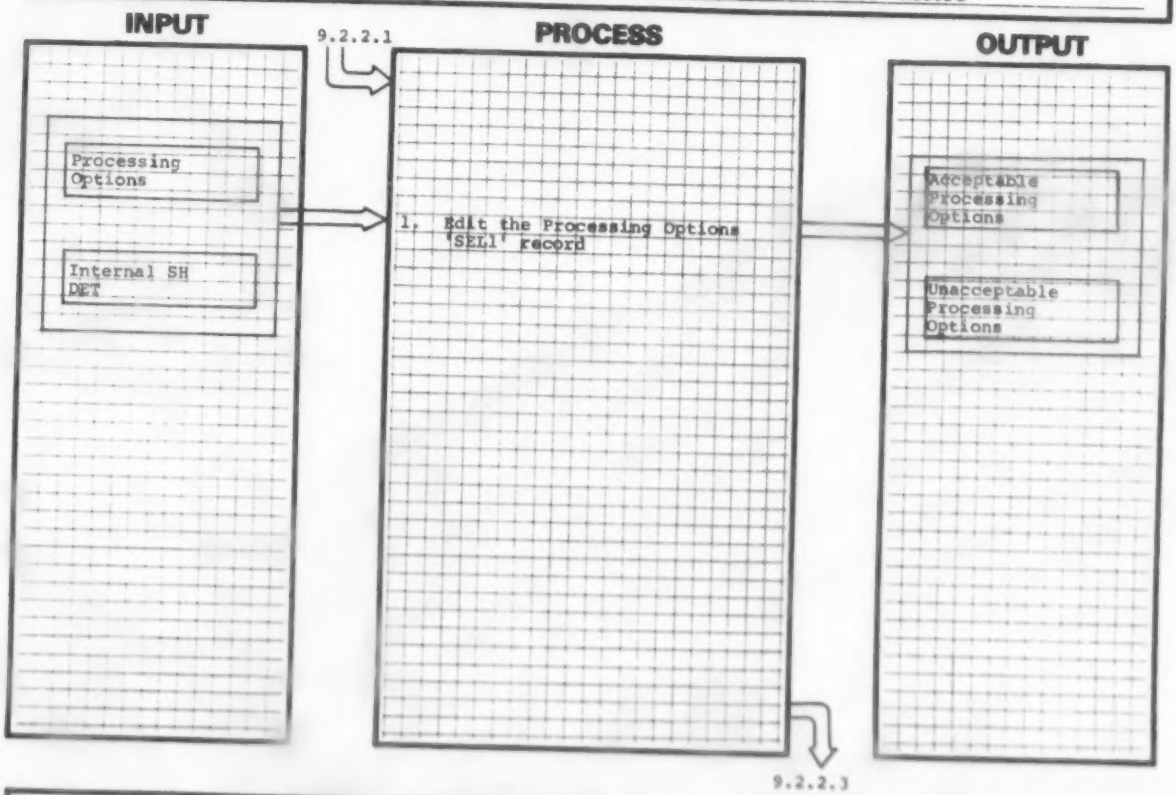


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record for a valid date. This date is used in producing the Standard Selection Statistics Report and the Selected Standard History File (SHF) report. If an error exists, it should be written to the Standard Selection Statistics Report. The error types are: a. No 'PROC' record exists b. The date is invalid c. There is more than one 'PROC' record. In this case the second 'PROC' record is in error. If an error exists, then do not print a date on the two reports.	9.2.2.1	MSIS040	101 204

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 of 1

Diagram No.: 9.2.2.2 **Description:** Edit Processing Options 'SEL1' Record

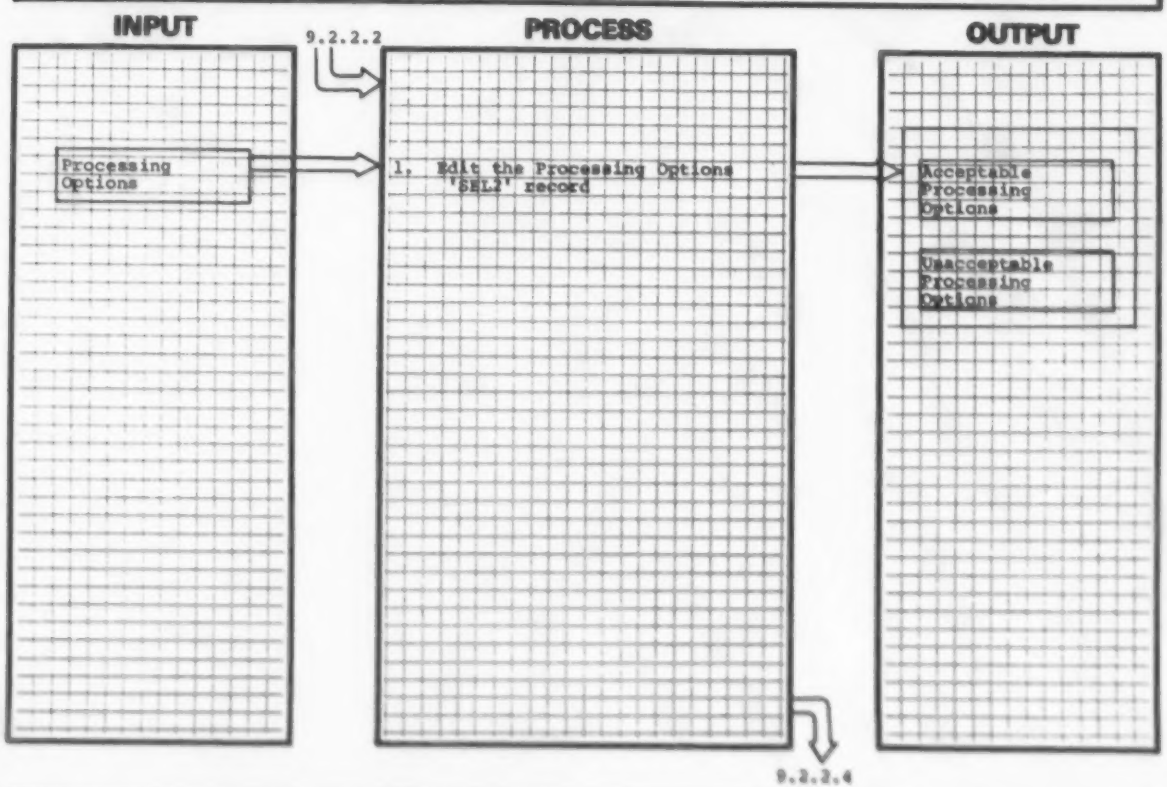


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Option records with 'SEL1' in positions 1-4 of the record as follows: a. MSI-SELECT-1-MNEMONIC, position 5-14, must equal one of the mnemonic names on the record layout for the Standard History File (SHF). This edit is hard coded into the program. b. MSI-SELECT-1-DE-VALUE, positions 15-29, must have blanks in positions (DET-INPUT-LENGTH plus 15) to 29 where DET-INPUT-LENGTH is the length of a data element associated with the mnemonic name matched in 1a above. Positions 15 to (DET-INPUT-LENGTH plus 14) must be either numeric or alphanumeric as specified by the Data Element Dictionary (DED) for that particular data element. Additionally, if the data element is a date, it is checked for validity and then converted to Julian for comparison purposed. c. MSI-SELECT-1-DE-NO, positions 30-31, must be a number from 01 to 35 and must be a different number from all other 'SEL1' records. If there are no 'SEL1' records or if any error exists on any 'SEL1' record, then the record is in error and will be written on the Standard Selection Statistics Report. Appropriate error messages for the 'SEL1' Processing Options record may be found by referencing the Error Code Instructions. If any errors exist, processing will be terminated.	9.2.2.2	MSI5040	106 210 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 of 1

Diagram No.: 9.2.2.3 **Description:** Edit Processing Options 'SEL2' Record

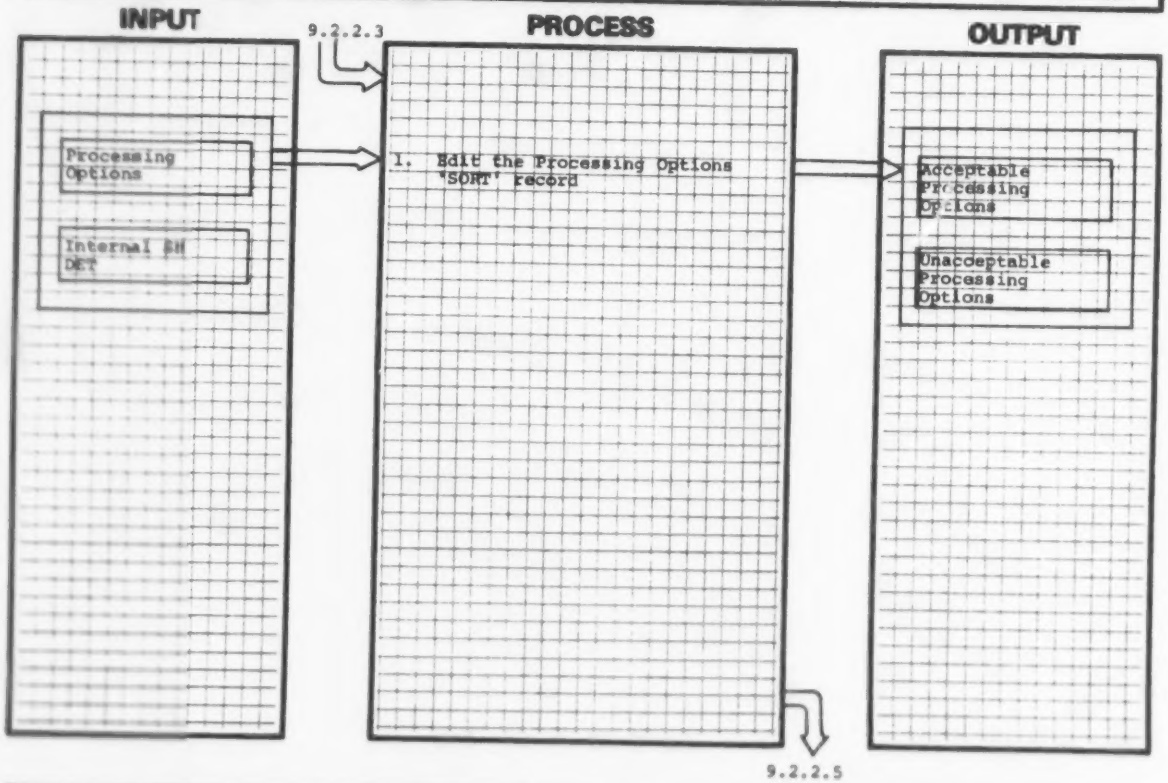


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL2' in positions 1-4 of the records as follows: a. Each non-blank MSI-SELECT-2-SYMBOL must have a corresponding 'SEL1' record, determined by MSI-SELECT-1-SE-NO being equal to the array position of the MSI-SELECT-2-SYMBOL being edited. In addition, the MSI-SELECT-2-SYMBOL must equal one of the following operational symbols: LT = less than EQ = equal to GT = greater than NL = not less than NG = not greater than NE = does not exist blank NOTE: If there are more than 20 'SEL2' records, if an 'SEL2' record exists, or if an error exists on a 'SEL2' record, then the record is in error and will be written on the Standard Selection Statistics Report. If any errors exist, processing will be terminated.	9.2.2.3	MSI8040	107 211

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 **of** 1

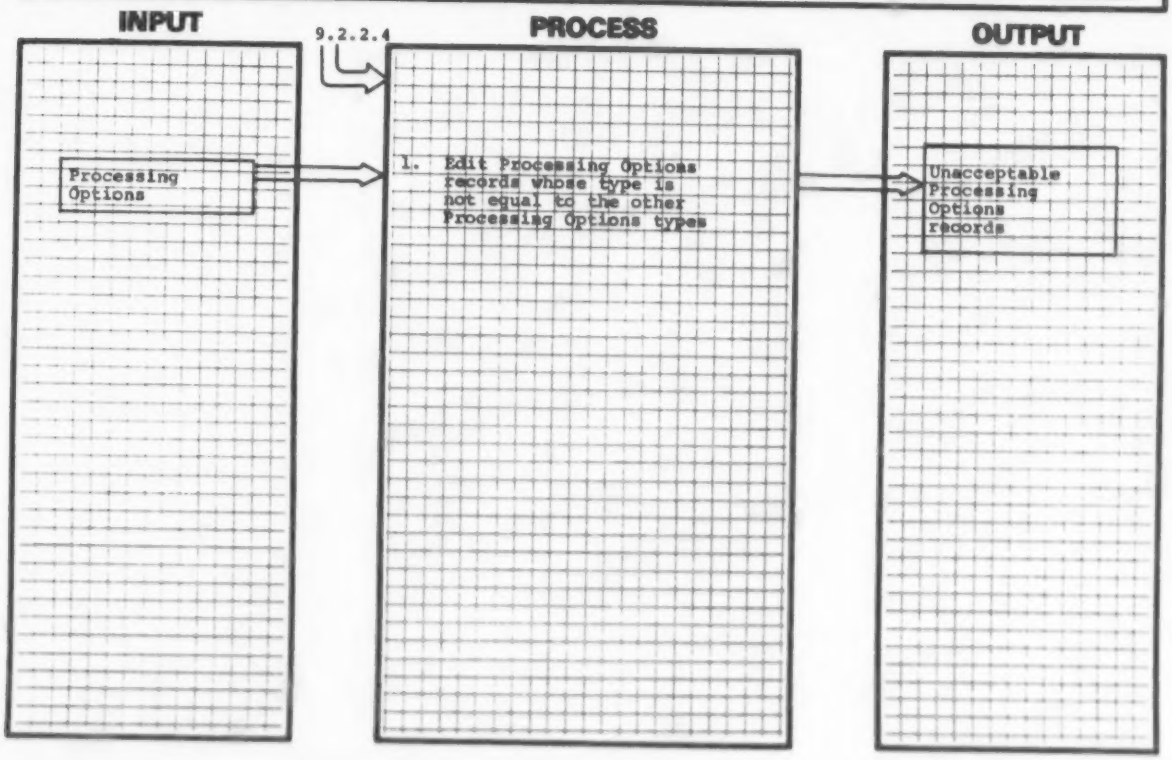
Diagram No.: 9.2.2.4 **Description:** Edit Processing Options 'SORT' Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. MSI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the MSI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, MSI-SORT-MNEMONIC and MSI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. MSI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the MSI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If MSI-SORT-SEQUENCE is non-blank, then MSI-SORT-MNEMONIC must be present. c. MSI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' or 'D'. If MSI-SORT-SEQUENCE is non-blank, then MSI-SORT-MODE must be present. As each MSI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain an insert or delete entry. If an error exists on any 'SORT' record, then it will be written on the Standard Selection Statistics Report and processing will be terminated.	9.2.2.4	MSIS040	108 212

MODEL STATE INFORMATION SYSTEM

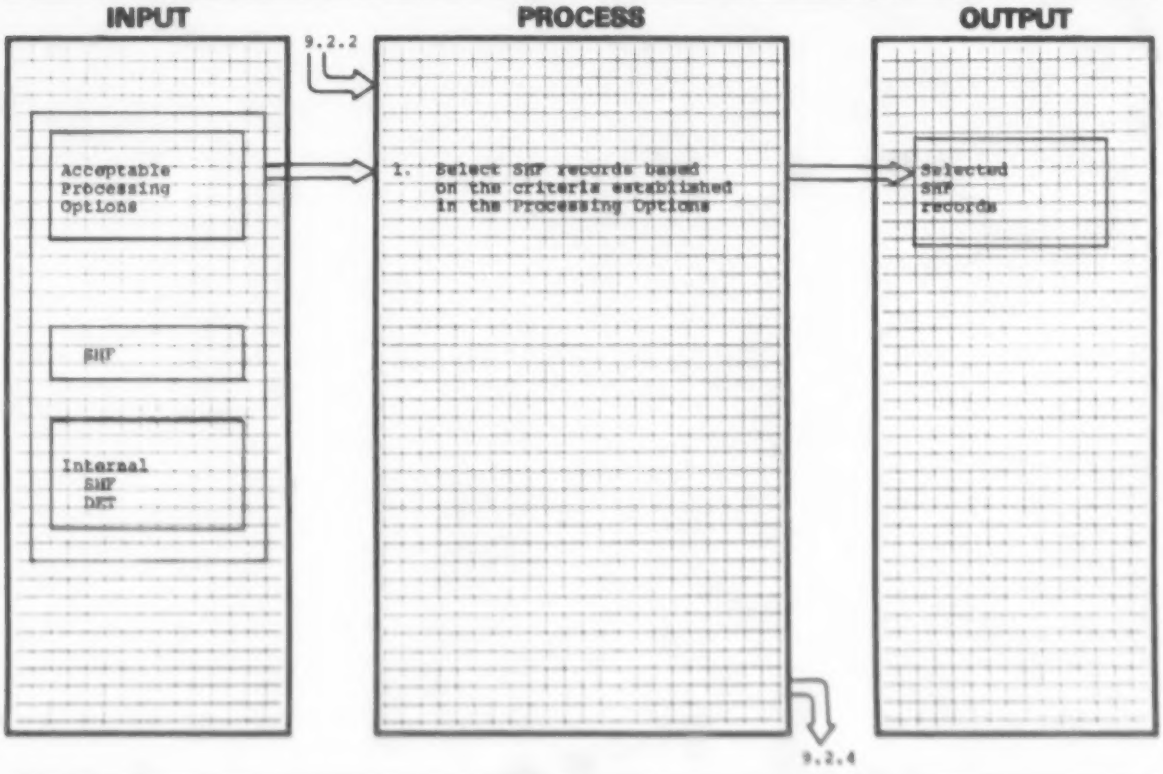
Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 of 1
Diagram No.: 9.2.2.5 **Description:** Edit for Other Processing Options Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Any Processing Options records which fall into this category are in error and should be written to the Standard Selection Statistics report and flagged as being in error. The processing is then terminated.	9.2.2.5	MSIS040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 **of** 1
Diagram No.: 9.2.3 **Description:** Select SHF Records

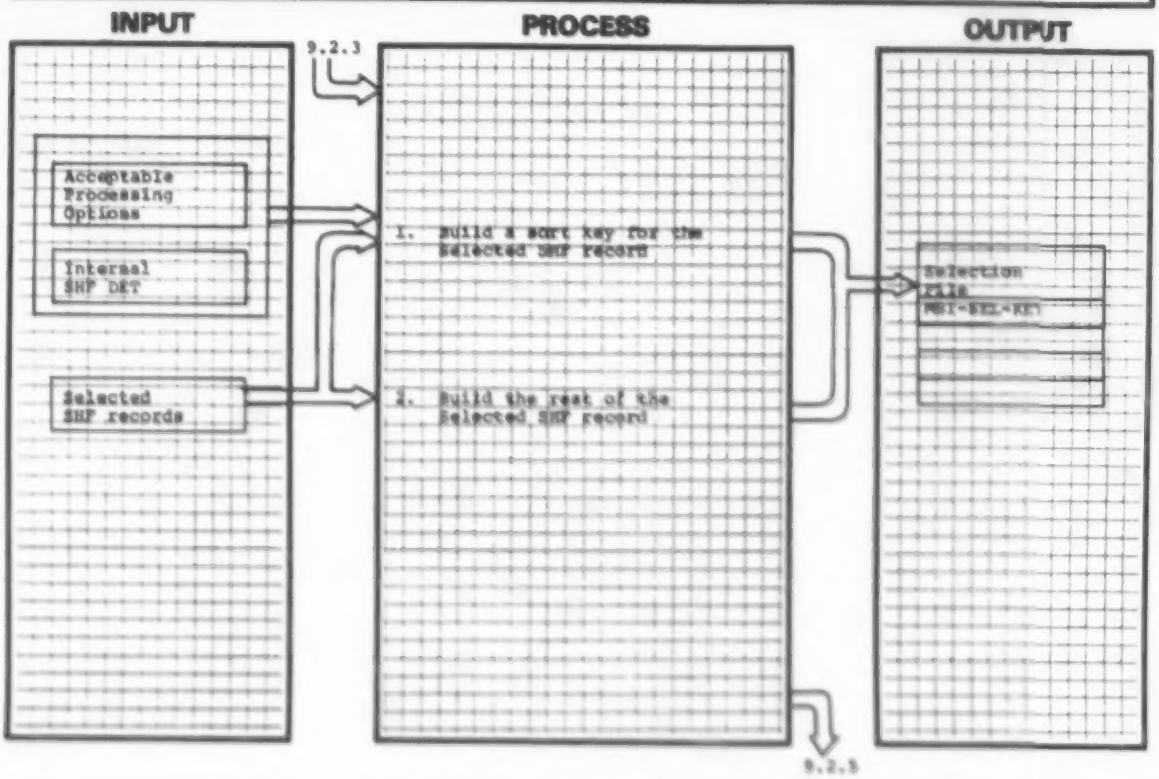


STEP	EXTENDED DESCRIPTION	REFERENCES		
		MIPO	PROGRAM	OTHER
1	Read a Standard History File (SHF) record. For each mnemonic name, MSI-SELECT-1-MNEMONIC specified on the "SEL1" records, obtain the corresponding data element value from the SHF record. If the MSI-SELECT-1-MNEMONIC represents a value with a length greater than 15, only obtain the first fifteen positions of the value. Using these values obtained from the SHF record examine the logic established in each "SEL2" record to determine if the SHF record should be selected. If the 9th MSI-SELECT-1-DE-VALUE from the 15 position array of a "SEL2" record is non-blank then compare the appropriate value from a "SEL1" record (MSI-SELECT-1-DE-VALUE, where MSI-SELECT-1-DE-NO = 9) with the corresponding value (same mnemonic name) obtained from the SHF record. The comparison between these two values is made according to the 9th operational symbol (see OIPD 9.2.2.3). If there is an unique corresponding value (values exist in an array), then each value in the array must be compared until one satisfies the conditions of the comparison. If the SHF record meets all the above comparison criteria, then the SHF record is selected. Each SHF record is processed using all "SEL2" records so that the selection counts are properly maintained.		MSIS040	202 210 211

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-14-76 Page: 1 of 1

Diagram No.: 9.2.4 Description: Build the Selected SHF Record with Sort Keys

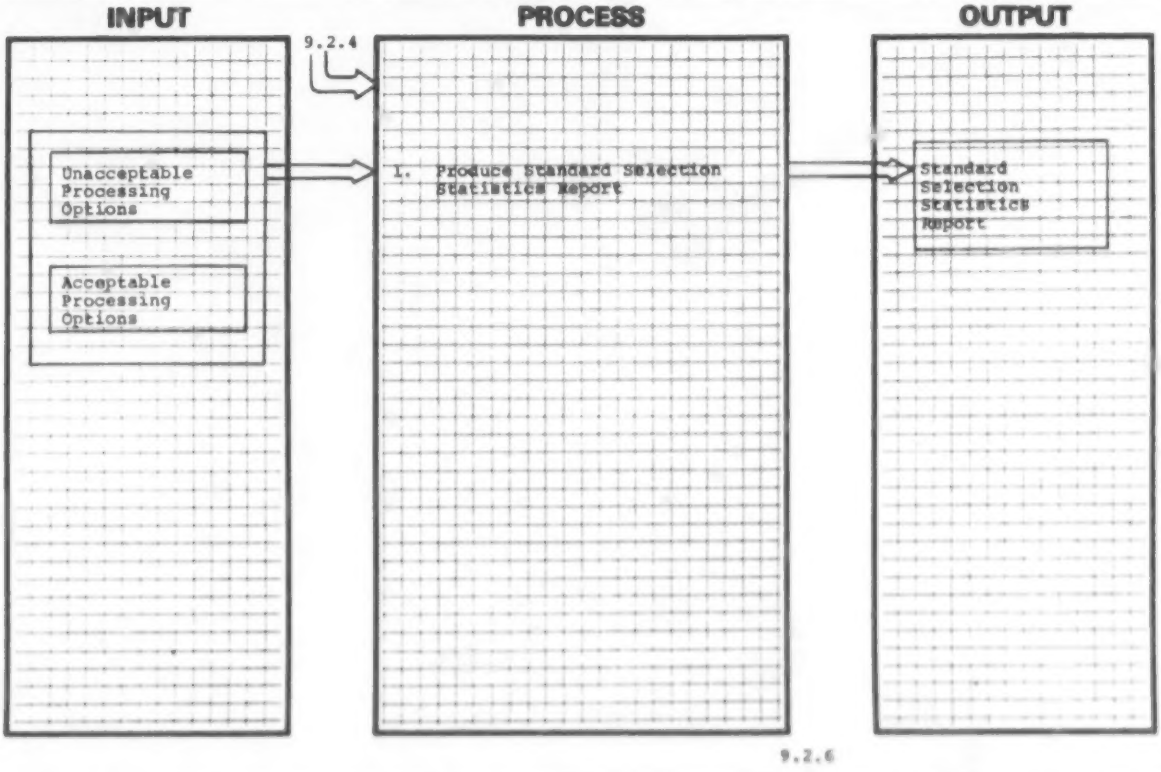


STEP	EXTENDED DESCRIPTION	REFERENCE: MSPO	REFERENCE: PROGRAM	REFERENCE: OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Selected Standard History File based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) SHF record as an array of one character values. b. Match the MSI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the SHF. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the SHF. c. Use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the MSI-SORT-MODE = "D" (ascending) move the value obtained in c. to the proper location in the sort key. If the MSI-SORT-MODE = "D" (descending) redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the MSI-SORT-SEQUENCE. NOTE: If there are no 'SORT' Processing Options records, move the normal SHF record key to the sort key field.		MSI040	202 212
2	Move the entire Selected SHF record as is into the rest of the Selection record (after the MSI-SEL-KEY).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-14-76 **Page:** 1 of 1

Diagram No.: 9.2.5 **Description:** Produce Standard Selection Statistics Report

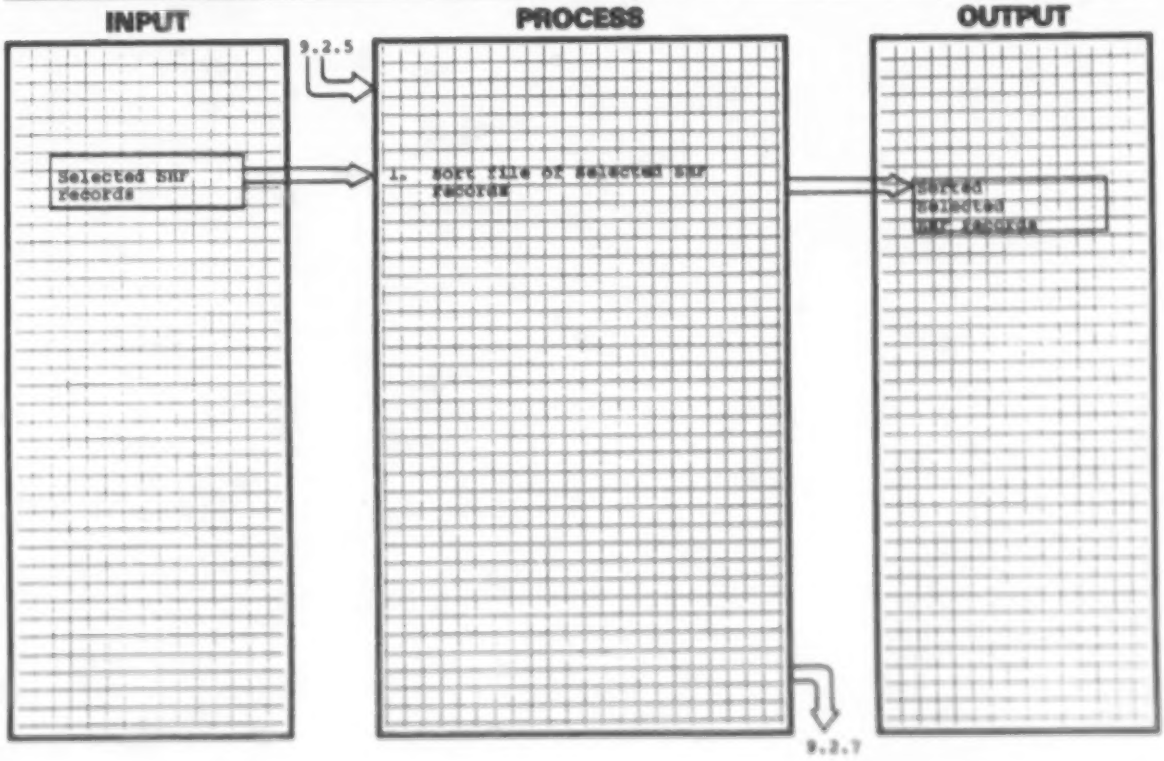


STEP	EXTENDED DESCRIPTION	REFERENCES		
		INFO	PROGRAM	OTHER
	The Standard Selection Statistics Report is always produced. The following two formats may be used: a. The Standard Selection Statistics Report contains: (1) the sort sequence mnemonics (2) the sort mode (3) the selection criteria (4) the total records selected under each selection criteria (5) the total of all records selected for the report (6) the percent of the file selected. b. If any Processing Options records are in error, the records and associated error messages are produced instead of or in addition to the information in a.		MSIS040	312

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-14-76 Page: 1 of 1

Diagram No.: 9.2.6 Description: Sort Selected SHF Records

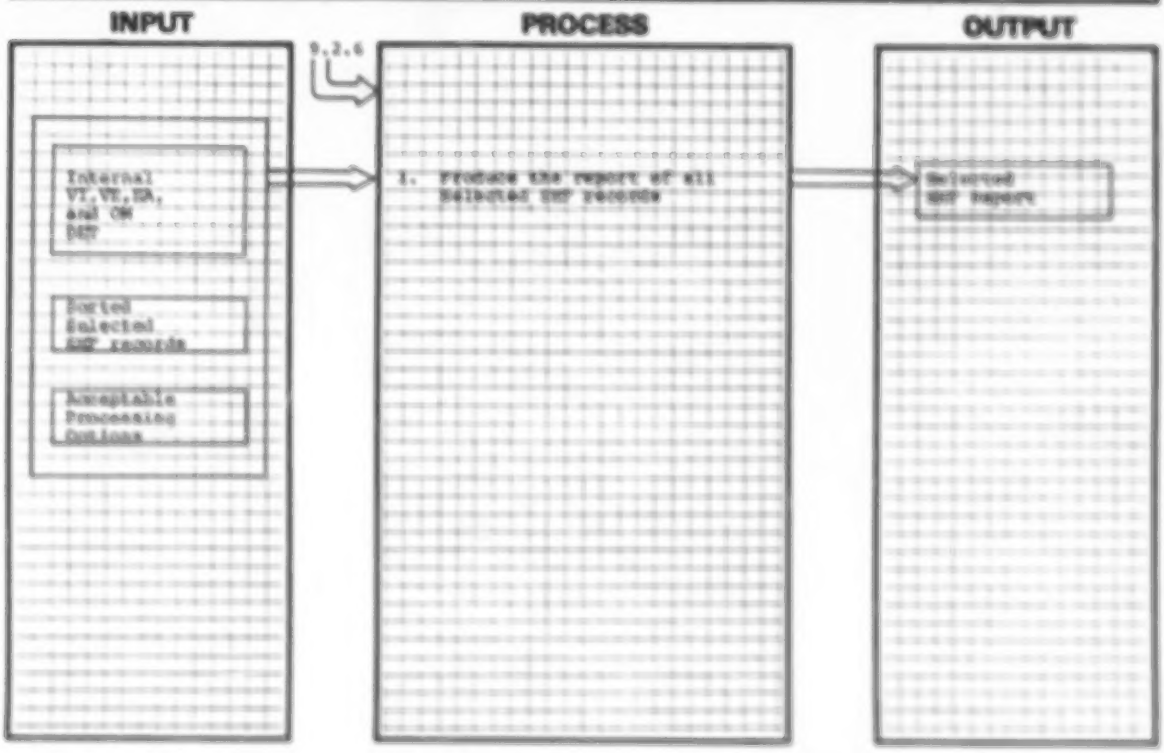


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Sort the Selected Standard History File (SHF), in ascending sequence according to the thirty position sort key.		M010040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-16-74 **Page:** 1 of 1

Diagram No.: 9.2.7 **Description:** Produce Selected SHP Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		INPUT	PROCESS	OTHER
1	Produce the report of all the Selected Standard History File (SHF) records. Match the catalogue number and Fileid on the SHP with those on the internal Occultations, (VI), Variances and Exemptions (VE), Enforcement Actions (EA) and Operator and Mailing (CM) Data Element Table (DET), use the associated mnemonic names to print on this report. NOTE: If there are no Selected SHP records, do not print this report. If there is an matching record on the internal SHP then move blanks to the print report.		Optional	DET EAT

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9 Standard Processing
9.3 Purge Standard History File (SHF)
9.3.1 Edit Processing Options
9.3.2 Build Internal Data Element Table (DET)
9.3.3 Purge Standard History File (SHF) Records
9.3.4 Produce Report of Purged Standard History File (SHF) Records and Update Statistics

LEGEND

Date Flow

Entries and Exits

Multiple I/O Reference

Diagram Type: VTOC

Diagram Number: 9.3

Subsystem: Standard Processing

Description: Purge Standard History File (SHF)

NARRATIVE

Subsystem: Standard Processing
Program Name: MSIS050
Date: 10-05-76

I. OBJECTIVES:

The objective of this program is to purge records from the Standard History File (SHF) that have the current update date less than the Processing Options Purge Date.

II. INPUTS:

A. Record Forms and Layouts:

	Name	Record Name	Exhibit Layout
1.	Data Elements Table	DET-RECORD	MSIS.201
2.	Standard History File	SHF-RECORD	MSIS.202

B. Processing Options Record(s):

	Name	Record Name	Form	Exhibit Layout
1.	Processing Options	MSI-PROC-SHF-RECORD	MSIS.100	MSIS.203

III. OUTPUTS:

A. Record Forms and Layouts:

	Name	Record Name	Exhibit Layout
1.	Standard History File (SHF)	SHF-RECORD	MSIS.202
2.	Purged Standard History File	SHF-T-RECORD	MSIS.213

B. Report Layouts:

	Name	Exhibit Layout
1.	Purge of the Standard History File Report	MSIS.305
2.	Standard Update Statistics Report	MSIS.300 MSIS.309

C. Turnaround Documents:

1. Not Applicable

IV. FUNCTIONS:

1. The Processing Options are edited. This includes the date which determines which records are to be purged and a print select that determines whether a detail report of all purged Standard History File (SHF) records is to be produced. If either of the dates are invalid, then an appropriate error message will be produced and the processing will terminate.

2. An internal table is built from four Data Element Tables (DET): the Violations File (VIF), Variances and Exemptions File (VEF), Enforcement Actions File (EAF), and Operator and Mailing File (OMF). This internal table contains the data elements for printing the report of purged SHF records.

3. The SHF records are purged if the current update date is less than the processing options purge date. Two intermediate files are built which contain the purged SHF records and the updated SHF records, respectively.

4. The detail print report of all the Purged Standard History File records is produced if specified by the Processing Options. The Standard Update Statistics Report is always produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry Instructions:

1. Processing Options

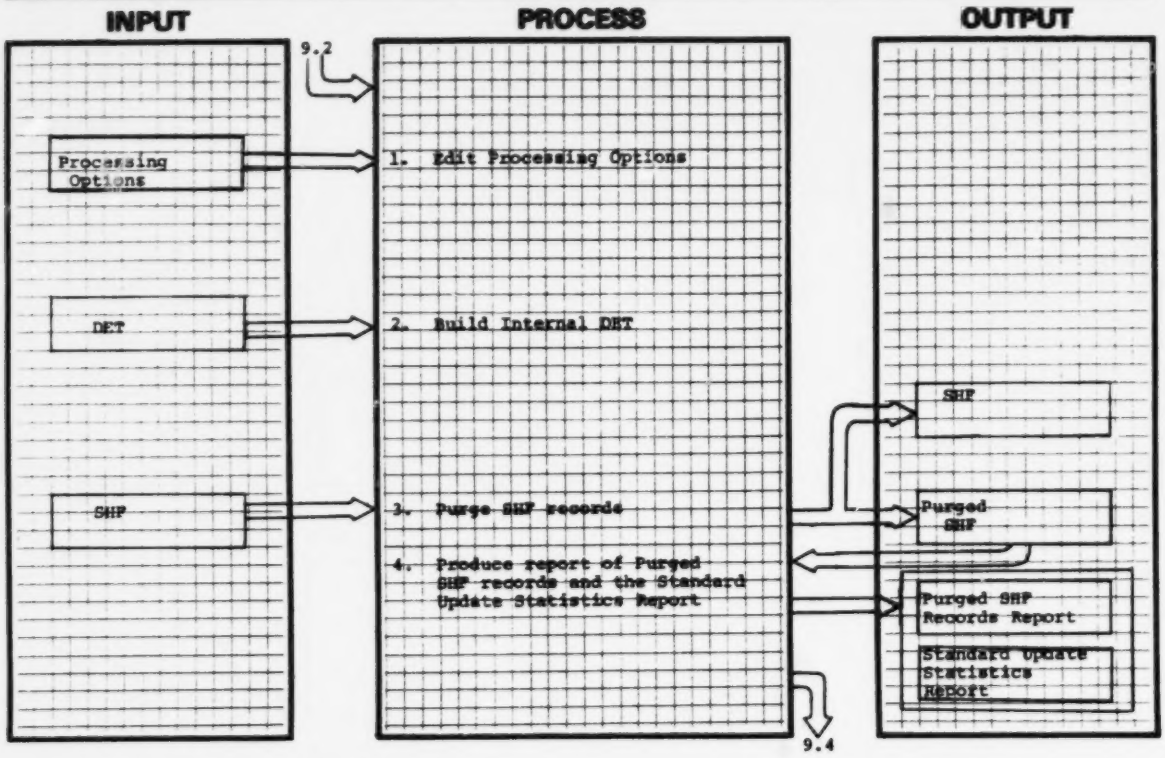
B. Data Element Descriptions:

1. Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Standard Processing (MSIS) Date: 10-15-76 Page: 1 of 1

Diagram No.: 9.1 Description: SHF Purge

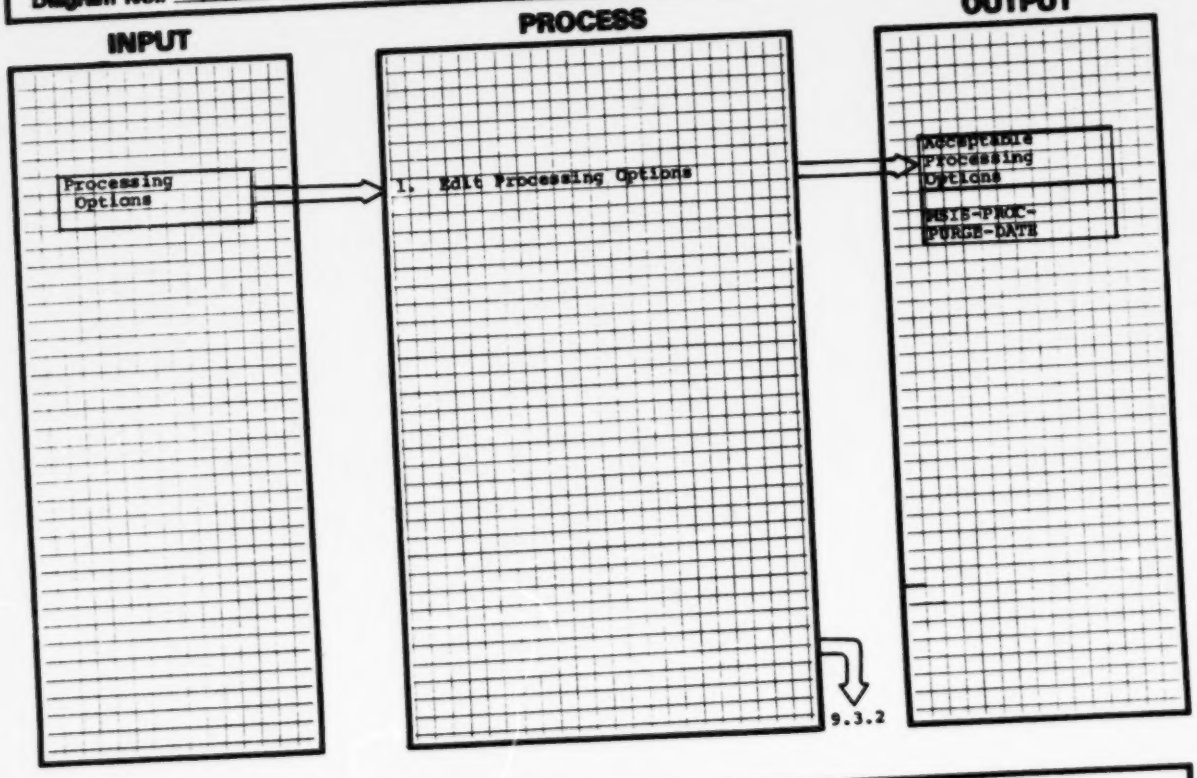


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options include: a. the date used in determining which Standard History File (SHF) records to purge b. the current date c. whether or not to print a report.	9.3.1	MSIS050	
2	Build an Internal Table of catalogue numbers, mnemonic names and file ID of data elements from the Data Element Tables (DET) of the Violations File (VIF), Enforcement Actions File (EAF), Variance and Exemption File (VEF), and the Operator and Mailing File (OMF).	9.3.2	MSIS050	
3	All SHF records which have SHF-CUR-UPDATE-DATE less than the Processing Options Purge date are purged from the SHF. This results in a new SHF and a file of purged SHF records.	9.3.3	MSIS050	
4	Produce the SHF Report showing all the SHF records purged and the Standard Update Statistics.	9.3.4	MSIS050	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-15-76 Page: 1 of 1

Diagram No.: 9.3.1 Description: Edit Processing Options

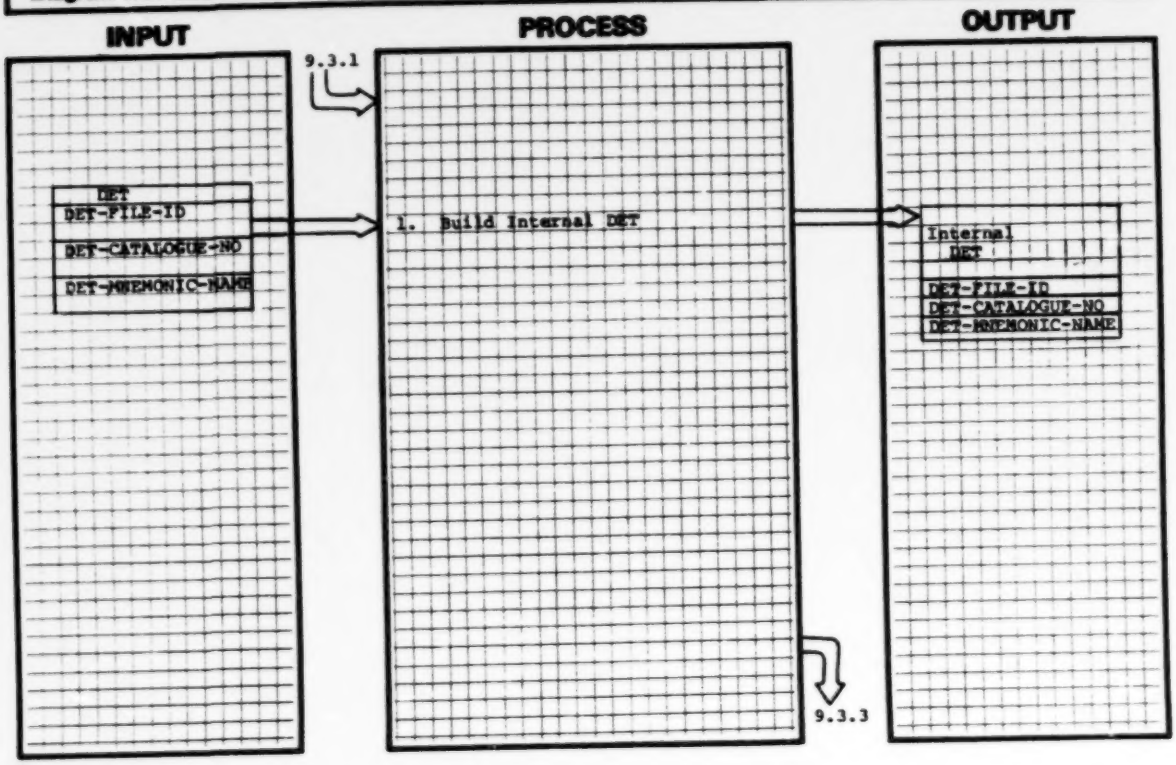


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
			MSIS050	100
1	Processing options include: a. Card ID must equal 'PROC'. b. the date used to determine which records are to be purged (Purge records with SHF-CUR-UPDATE-DATE less than MSIS-PROC-PURGE-DATE). c. MSIS-PROC-CURRENT-DATE d. print option which determines whether a detail report of all purged Standard History File (SHF) records is produced. 1 - no report is produced 2 - print all purged SHF records Both dates are edited to verify that they are valid. If there are any errors on the Processing Options record, the record and associated error messages are printed on the Standard Error Report.			203 309

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-15-76 Page: 1 of 1

Diagram No.: 9.3.2 Description: Build Internal DET

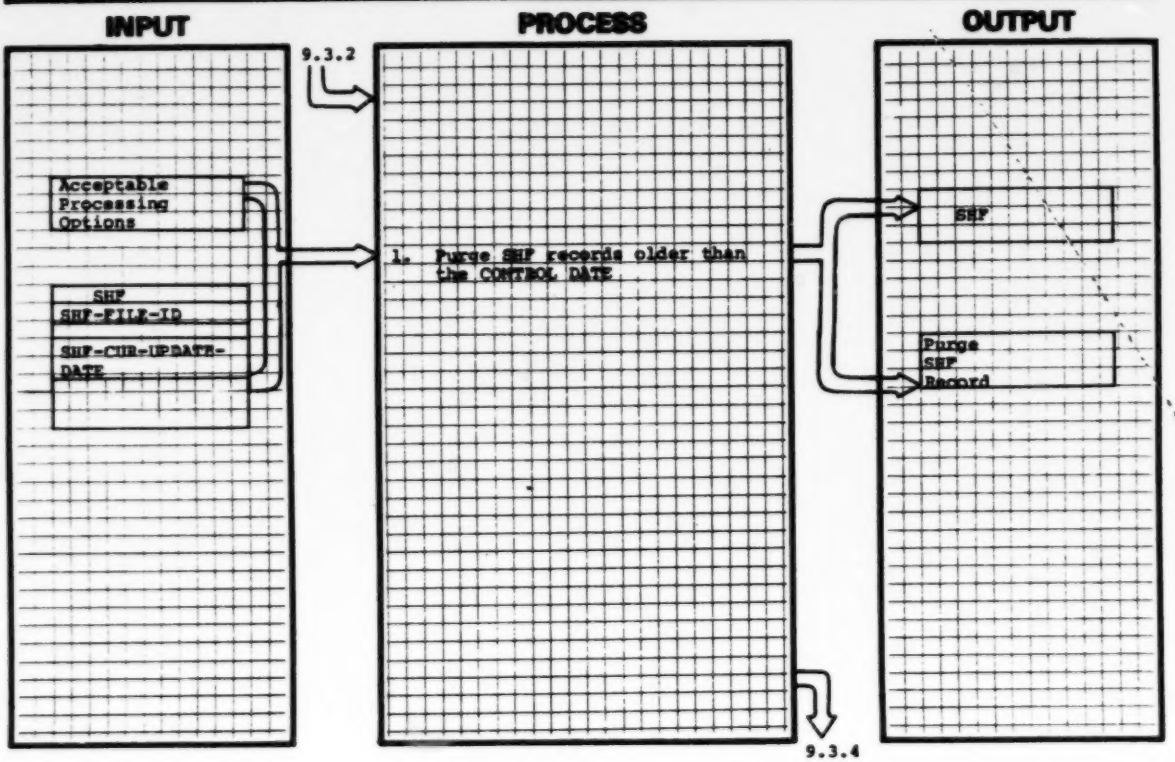


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having file ID's of VI, VE, EA, and OM. Only the file ID, catalogue number, and data element mnemonic are used.		MSIS050	201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-15-76 Page: 1 of 1

Diagram No.: 9.3.3 Description: Purge SHF Records

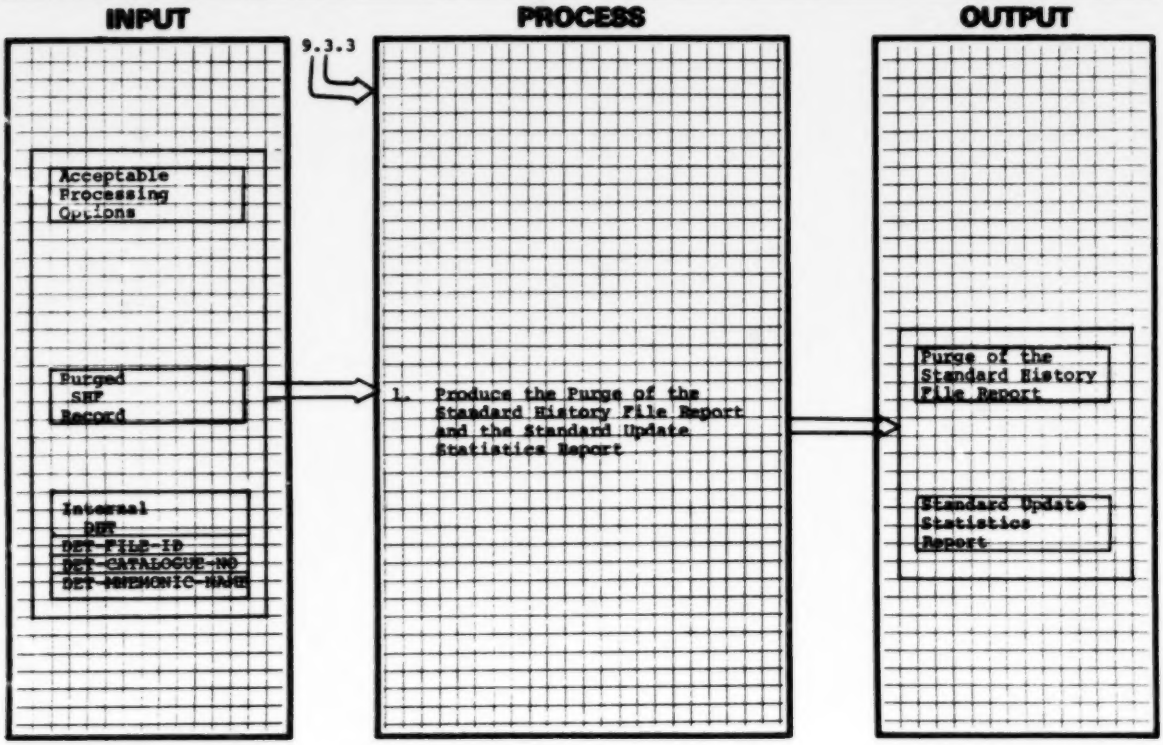


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Standard History File (SHF) records are purged if the SHF-CUR-UPDATE-DATE (current update date) is less than the CONTROL DATE. Two output files are created: a. Update SHF b. Purged SHF records.		MSIS050	202 213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-15-76 **Page:** 1 **of** 1

Diagram No.: 9.3.4 **Description:** Produce the Purge of the SHF Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the Processing Option selects to print the detail report, produce the report of all the Purged Standard History File (SHF) Records. The Standard Update Statistics Report is always produced whether or not the Purged SHF Records are reported. Any Processing Options errors are written as part of the Standard Update Statistics Report.		MSIS050	300 305 309

Diagram Type: VTOC
Diagram Number: 9.4
Subsystem: Standard Processing
Description: Produce Standard Error Report

NARRATIVE

Subsystem: Standard Processing
Program Number: MSIS010
Date: 10-19-76

I. OBJECTIVES:

The objective of this program is to produce the Data Entry Error Report, and if specified by the Processing Options, an Optional Error File (OEF). Both are produced using the Standard Error File (SEF), which is a file of error transactions that is produced by the Public Water System Inventory, Water Quality Compliance, Regulations, Variances and Exemptions, Enforcement Actions, Operator and Mailing, and Standard Processing subsystems.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Data Element Table	DET-RECORD	MSIS.201
2.	Error Message Table	EMT-RECORD	MSIS.205
3.	Standard Error File	SEF-RECORD	MSIS.207
		MSI-PROC-SEF-RECORD	MSIS.208

B. Processing Options Records:

1. Not Applicable

III. OUTPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Optional Error File	OEF-RECORD	MSIS.215

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Data Entry Error Report	MSIS.313

C. Turnaround Documents:

1. Not Applicable

IV. FUNCTIONS:

1. The Processing Options on the Standard Error File (SEF) are edited. This includes:

    1. the date (to be used for the process date),
    2. a data element select field (determines if the entire error transaction is to be printed, or just the data element fields in error),
    3. an Optional Error File field (determines if the Optional Error File (OEF) is to be created).
    4. the file ID which determines the headings for the Data Entry Error Report.

    If this record is not present or the date and option fields are blank an appropriate error message is produced and the processing is terminated.

2. Selected data elements of the Data Element Table (DET) and of the Error Message Table (EMT) are used to create an internal table for each.

3. The Data Entry Error Report is produced. Its contents depend on the Processing Options specified.

4. Based on Processing Options an Optional Error File (OEF) is produced. This file is made up of the transactions that were in error. It may be used to punch cards or to correct the errors using a text editor.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions

1. Not Applicable

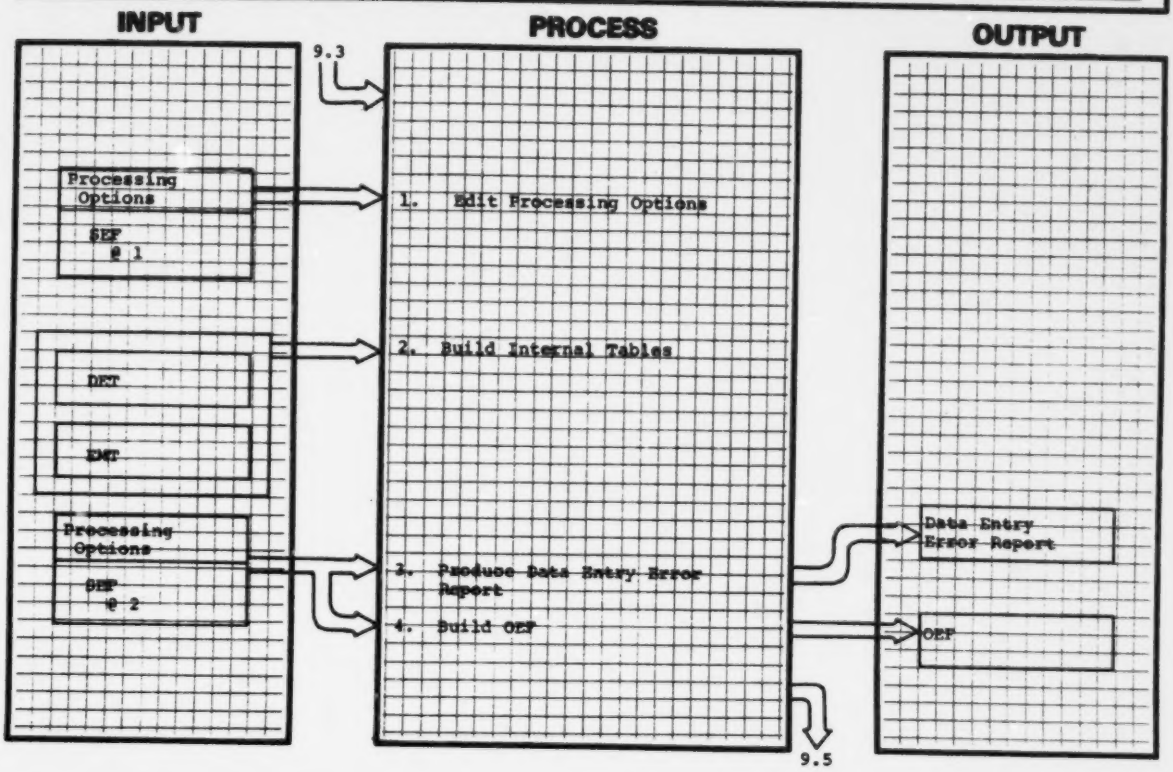
B. Data Element Dictionary

1. Standard Error File (SEF)

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Standard Processing **Date:** 10-28-76 **Page:** 1 of 1

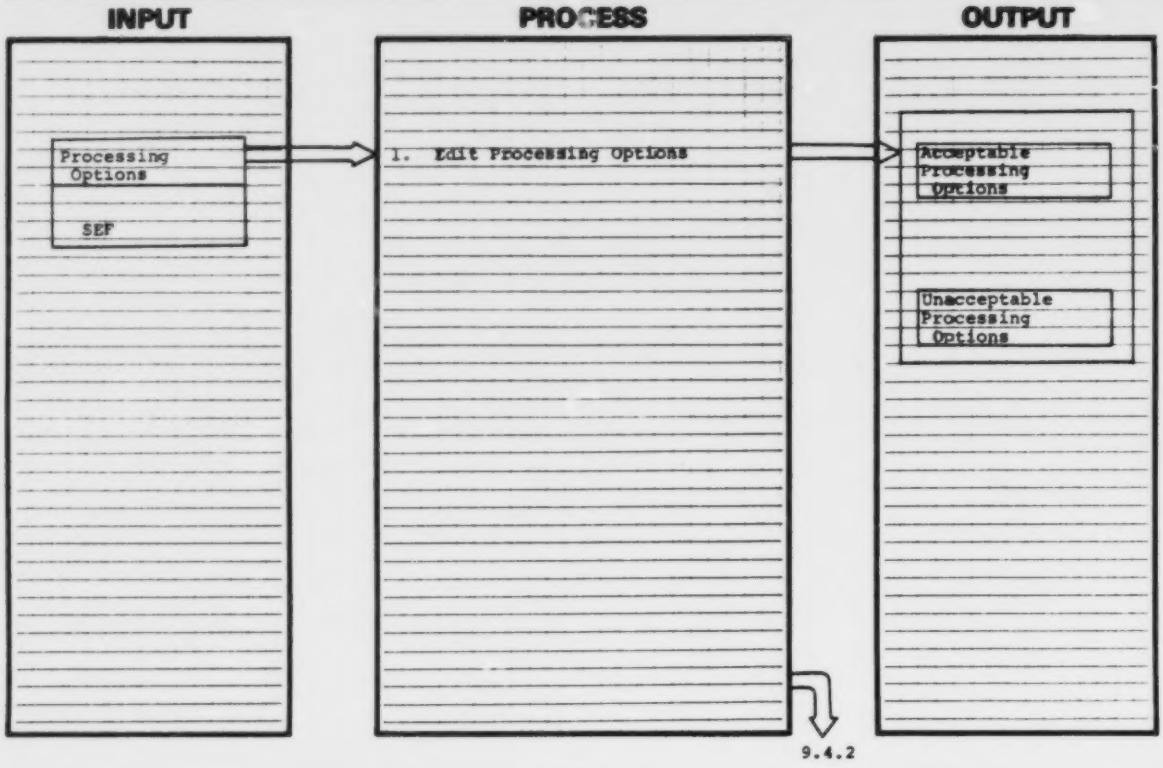
Diagram No.: 9.4 **Description:** Produce Data Entry Error Report or OEF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Prior to processing, the Standard Error File (SEF) will be sorted on record key and transaction type.			
1	Edit the Processing Options: data element fields to be printed, Optional Error File (OEF) creation.	9.4.1	MSIS010	
2	Select data from the Data Element Table (DET), and Error Message Table (EMT) and build an internal table for each.	9.4.2	MSIS010	
3	For each error on the Standard Error File (SEF) select the appropriate data element mnemonic name, starting position, and input length from the internal DET. Select the appropriate error number and explanation from the internal EMT. Produce the Data Entry Error Report or OEF.	9.4.3	MSIS010	
4	If specified by the Processing Option an Optional Error File (OEF) of all the transactions in error is built.	9.4.4	MSIS010	
	NOTE: Error codes are located in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

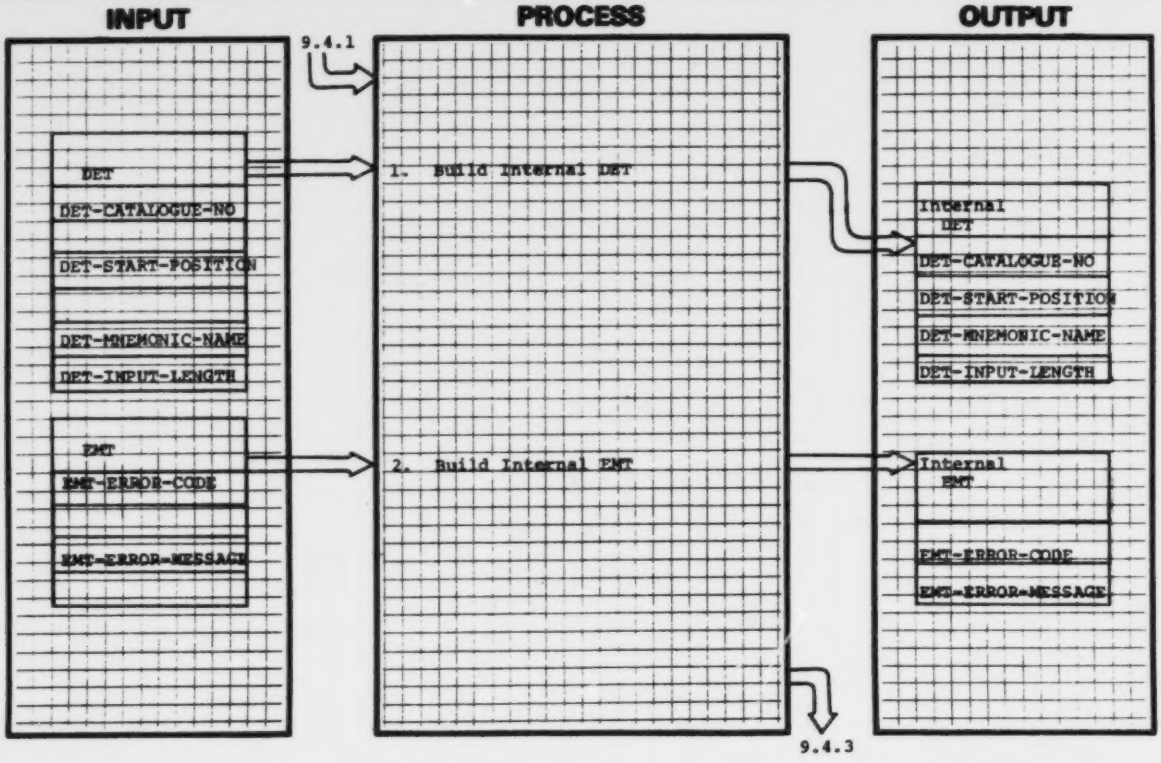
Diagram Type: Detail Subsystem: Standard Processing Date: 10-28-76 Page: 1 of 1
Diagram No.: 9.4.1 Description: Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The first record on the Standard Error File (SEF) is the Processing Options record. It is identified by 'LOW VALUES' in the first four positions of the record. Editing criteria and actions are: a. Positions 1-4 do not contain 'LOW VALUES' - discontinue processing, produce an error report with message 'FIRST RECORD NOT PROCESSING OPTIONS'. b. Positions 5-12 are blank - discontinue processing. c. If Position 11 contains 'Y', the Optional Error File (OEF) of error records is to be created. Any other value is acceptable but do not create output file. d. If Position 12 contains 'Y', print only the data element fields that are in error. Any other value is acceptable but print the entire SEF-TRANSACTION field. NOTE: The Processing Options record and the entire SEF are output of the Public Water System Inventory, Water Quality Compliance, Regulations, Variances and Exemptions, Enforcement Actions, Operator and Mailing, and Standard Processing Subsystems.		MSIS010	208

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-28-76 Page: 1 of 1
Diagram No.: 9.4.2 Description: Build Internal DET and EMT

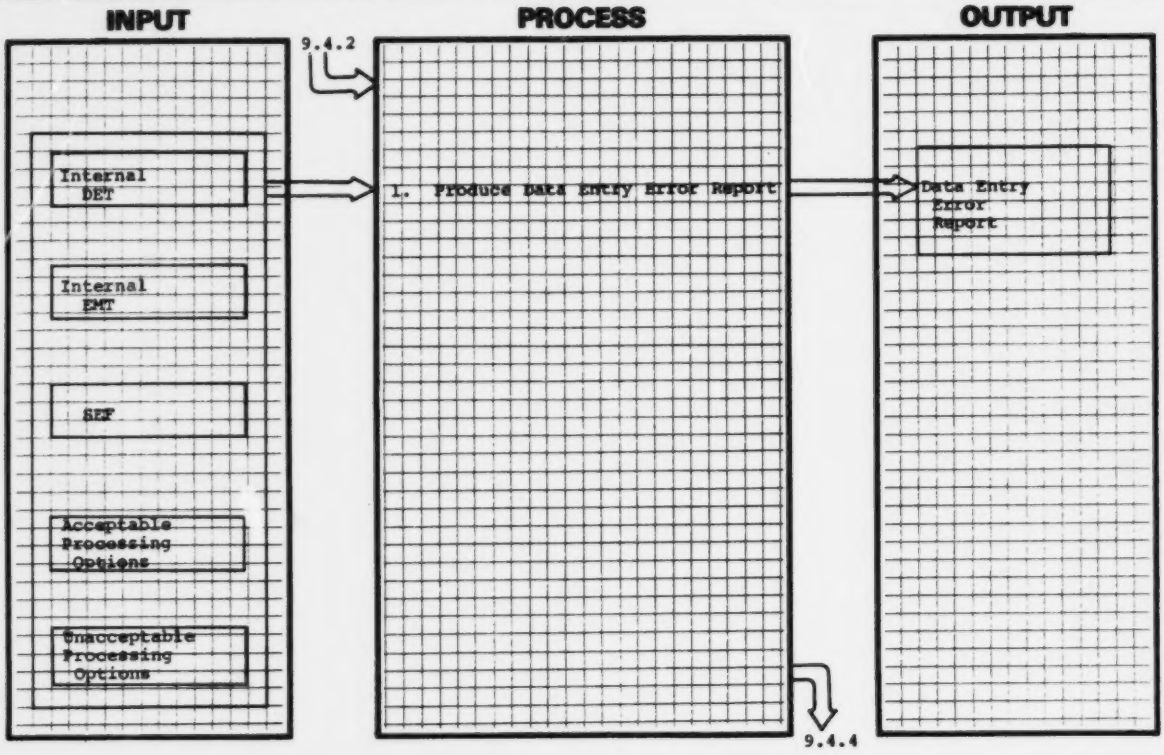


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET. Only the file start position, data element length, catalogue number, and data element mnemonic are used. Allow for 150 entries.		MSIS010	201 DED
2	Move the specified data elements from the Error Message Table (EMT) to an internal EMT, large enough to hold 150 entries.		MSIS010	205 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-28-76 Page: 1 of 2

Diagram No.: 9.4.3 Description: Produce Data Entry Error Report



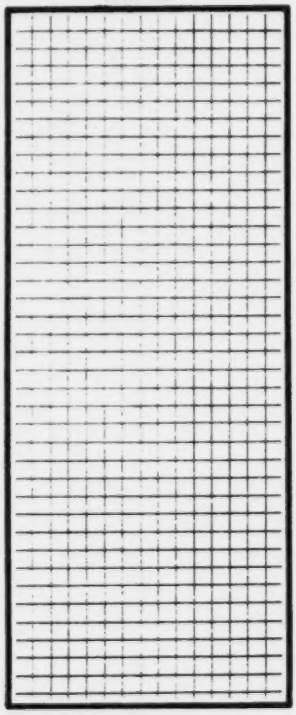
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Match the occurrence of the error code on the Standard Error File (SEF) with an error code in the internal Error Message Table (EMT), to acquire the appropriate error message. If there is no match, the error code is printed under the Explanations heading. Match the data element catalogue number on the SEF with a catalogue number in the internal Data Element Table (DET) to acquire the data element mnemonic, the length, and the starting position. If there is no match, the data element catalogue number is printed under the Data Element and Columns headings. Except for the SEF built in the Regulations subsystem, in most cases the first 80 positions of the record contain the actual update transaction. If the option to print only the fields in error is specified, the fields are to be printed in the appropriate position within the transaction field of the detail line. Use the information on the internal DET to do this. The key for the SE-RECORD must also be printed. The different positions of the key for the SE-TRANS of different files are listed below. Also, if any error code for a particular SEF record falls within the range 001-100, the entire transaction is to be printed even if this option has been used. If a page break forces errors for the same transaction to print on two pages, the transaction should be repeated on the first detail line of the new page. There can be thirty error codes per SEF record. When the first blank error code is found, then there are no more error messages to print for that SEF record. Use the file ID to get the appropriate report headings.		MSIS010	201 205 207 208 309 DED

MODEL STATE INFORMATION SYSTEM

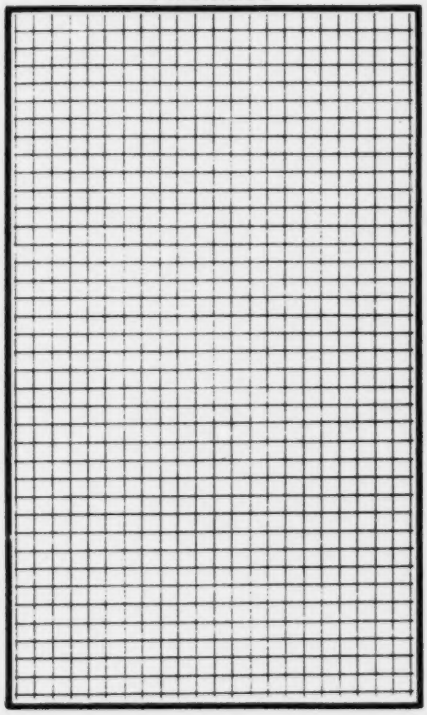
Diagram Type: Detail Subsystem: Standard Processing Date: 10-28-76 Page: 2 of 2

Diagram No.: 9.4.3 Description: Produce Data Entry Error Report

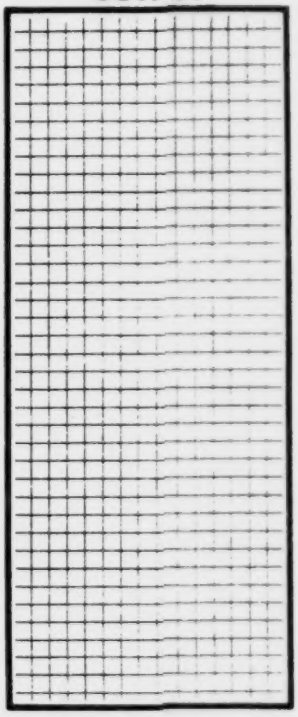
INPUT



PROCESS



OUTPUT

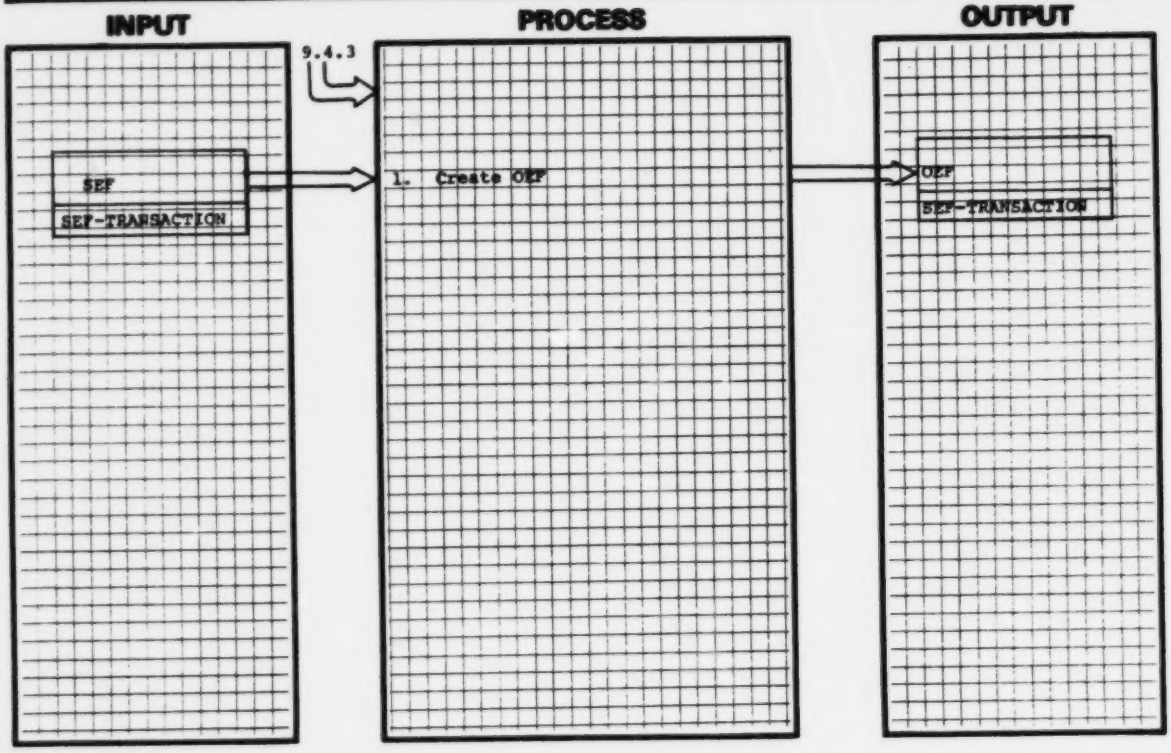


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	FILE Key-Positions-SE-TRANS VI 1-7 VE 1-7 EA 1-7 OM 1-7 SA 1-9 PS 1-9 RG 1-6, 79-80 LB 1-6, 79-80 PW 1-9 SH 1-15 PH 1-15			

MODEL STATE INFORMATION SYSTEM

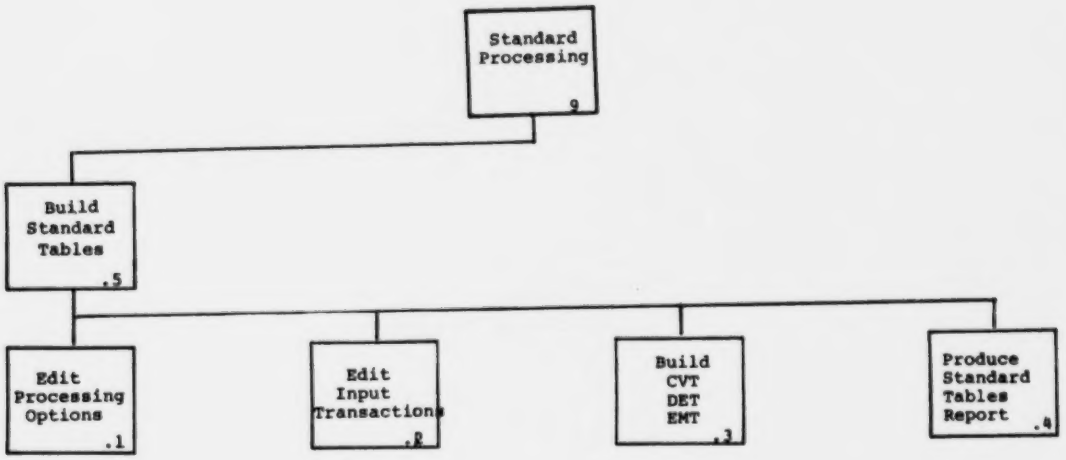
Diagram Type: Detail Subsystem: Standard Processing Date: 10-28-76 Page: 1 of 1

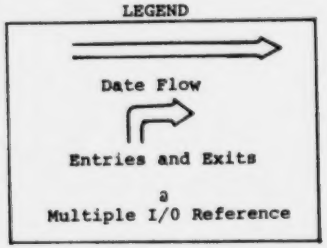
Diagram No.: 9.4.4 Description: Create OEF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If it has been determined that Processing Options have specified the creation of the Optional Error File (OEF), SEF-TRANSACTION is used to create one. The OEF may be used to punch error records for correction or used with a text editor.		MSIS010	215

Diagram Type: VTOC
Subsystem: Standard Processing
Diagram Number: 9.5
Description: Build Standard Tables





VISUAL TABLE OF CONTENTS

9 Standard Processing
9.5 Build Standard Tables
9.5.1 Edit Processing Options
9.5.2 Edit Standard Table Input Transactions
9.5.3 Build Code Value Table (CVT)
Data Element Table (DET)
Error Message Table (EMT)
9.5.4 Produce Standard Table Files Report

NARRATIVE

SUBSYSTEM: Standard Processing
PROGRAM NAME: MSIS030
DATE: 9-27-76

I. OBJECTIVES:

The objective of this program is to create three types of Standard Tables - Error Message Table, Code Value Tables and the Data Element Table - which are used throughout the eight subsystems in MSIS.

II. INPUTS:

A. Record Forms and Layouts:

NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1. Error Message Table Transactions	EMT-RECORD	MSIS.102	MSIS.205
2. Code Value Table Transactions	CVT-RECORD	MSIS.103	MSIS.206
3. Data Element Table Transactions	DET-RECORD	MSIS.104	MSIS.201

B. Processing Options Records:

NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1. Processing Options	MSI-PROC-RECORD	MSIS.101	MSIS.204

III. OUTPUTS:

A. Record Layouts:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Error Message Table	EMT-RECORD	MSIS.205
2. Code Value Table	CVT-RECORD	MSIS.206
3. Data Element Table	DET-RECORD	MSIS.201

B. Report Layouts:

NAME	EXHIBIT LAYOUT
1. Standard Update Statistics Report	MSIS.300 MSIS.309
2. Error Message Table Report	MSIS.302
3. Code Value Table Report	MSIS.303
4. Data Element Table Report	MSIS.304
5. Error In Card Code Report	MSIS.308

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. The Processing Options contain the date when this program was requested. An invalid date will stop the job from being processed.

2. There are three types of input transactions. The three types are edited according to the criteria established in the HIPO's and Data Element Dictionary (DED) to make sure they contain valid information.

3. Any input transactions which passed the edits are used to create one of the three types of Standard Tables: the Error Message Table (EMT), the Code Value Tables (CVT), or the Data Element Tables (DET). A card code is used to differentiate between the different input transactions.

4. A report will be produced which shows which transactions were in error and which transactions were used in building one of three Standard Tables. Standard Update Statistics will be generated to show how many records exist on the different tables.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options
2. Error Message Table
3. Code Value Table
4. Data Element Table

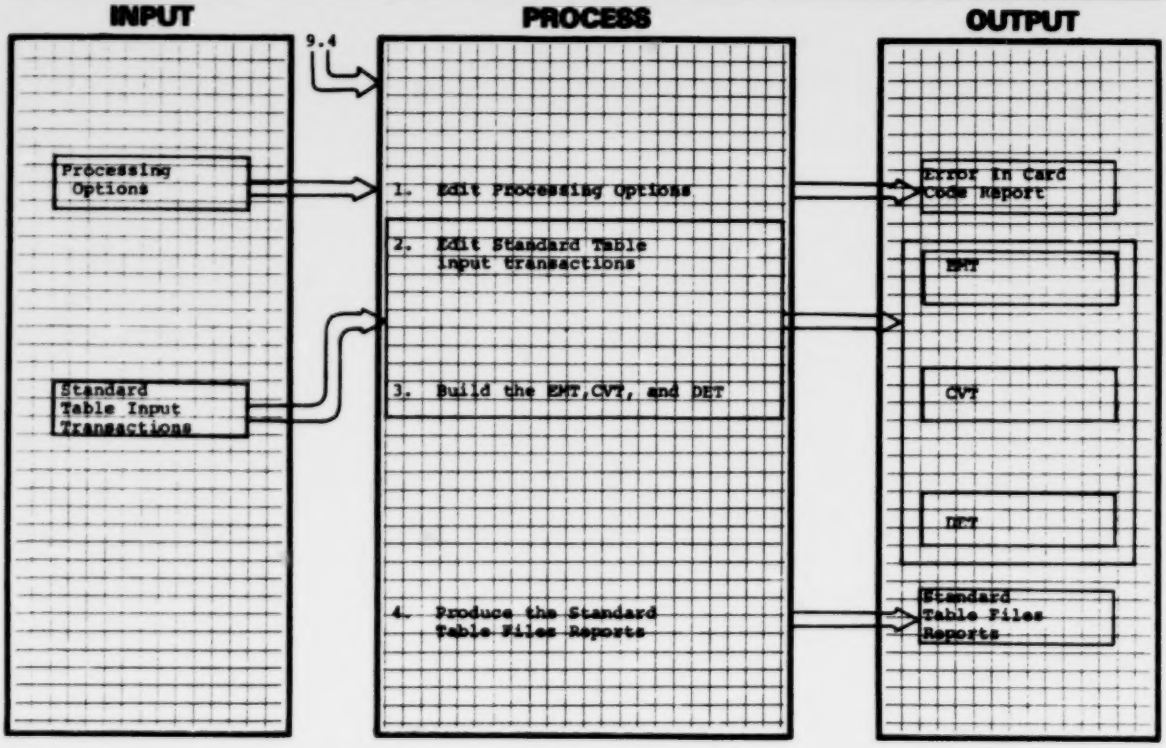
B. Data Element Descriptions:

1. Code Value Table
2. Data Element Table
3. Error Message Table

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Standard Processing Date: 10-5-76 Page: 1 of 1

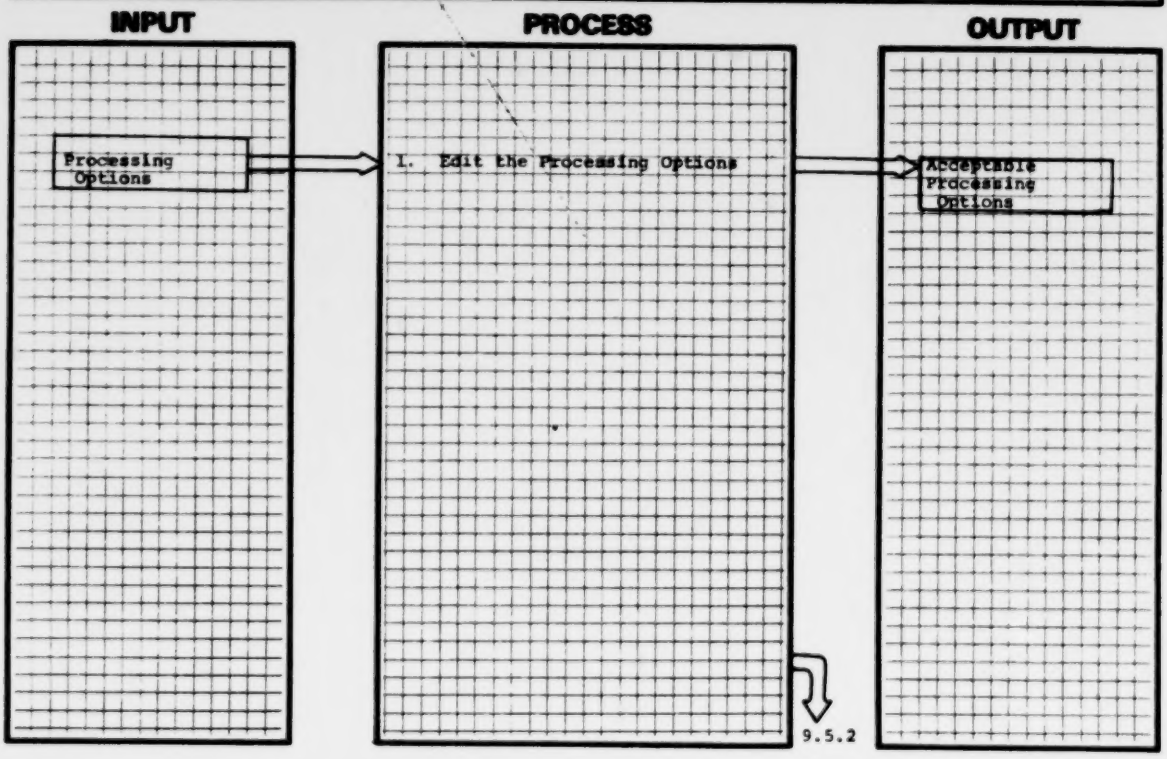
Diagram No.: 9.5 Description: Standard Tables Creation



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options include the date the job was requested.		MSIS030	
2	There are three types of input data transactions. One type creates the Error Message Tables (EMT). The second type creates the Code Value Tables (CVT), and the third type creates the Data Element Tables (DET). The input transactions will be sorted by card code, file ID, catalogue number, and data element value sequence before this module is begun.		MSIS030	
3	One Error Message Table (EMT) File will be created from the input data transactions whose card code equals "1". Card Code is the first position on all the input data. One Code Value Table (CVT) File will be created for each unique file ID for each transaction type '2'. Similarly, one Data Element Table (DET) will be created for each unique file ID for each transaction type '3'.		MSIS030	
4	All input data will be printed on a report to show what data was used to build the tables. Also included will be any input records which had erroneous data. These will be flagged on the report as being in error.		MSIS030	

MODEL STATE INFORMATION SYSTEM

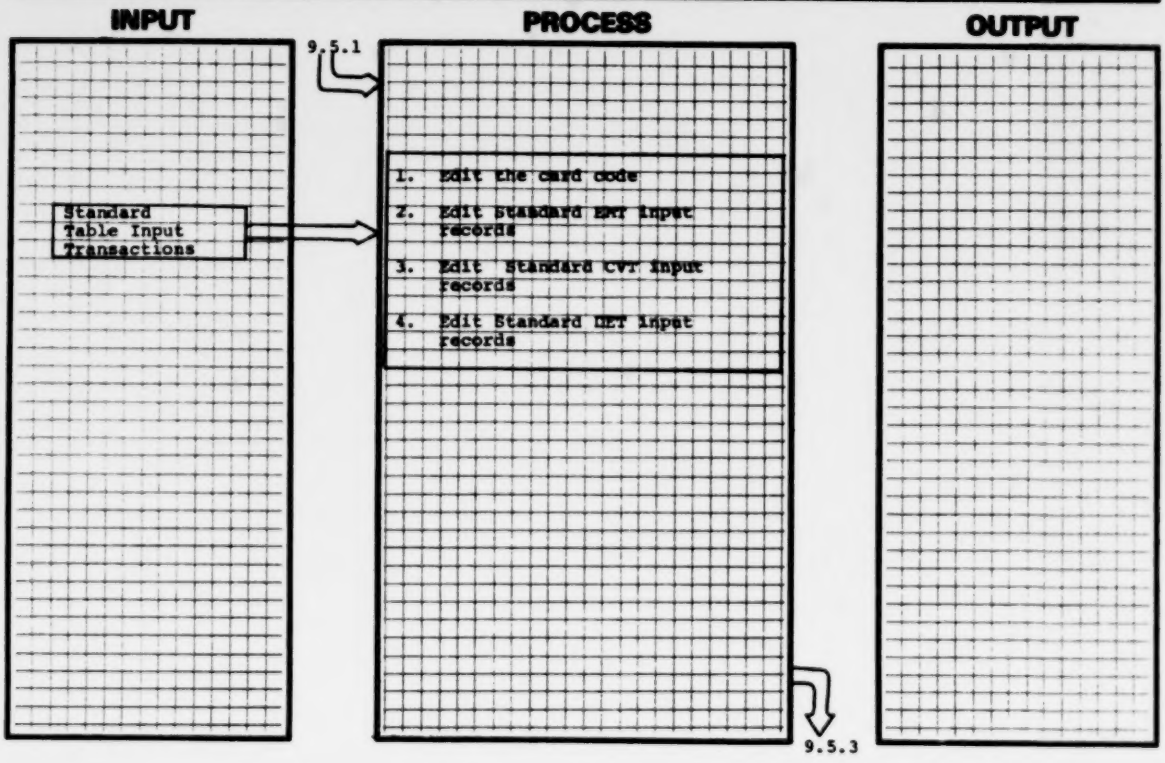
Diagram Type: Detail Subsystem: Standard Processing Date: 10-5-76 Page: 1 of 1
Diagram No.: 9.5.1 Description: Edit the Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options include an ID code and a date (PROC-DATE). a. ID, position 1-4, must equal 'PROC' b. The date must be a valid date. This date is used for printing the output report. If the code or date is invalid, the Processing Options record and associated error messages are produced on the Standard Error Report and processing is terminated.		MSIS030	101 204

MODEL STATE INFORMATION SYSTEM

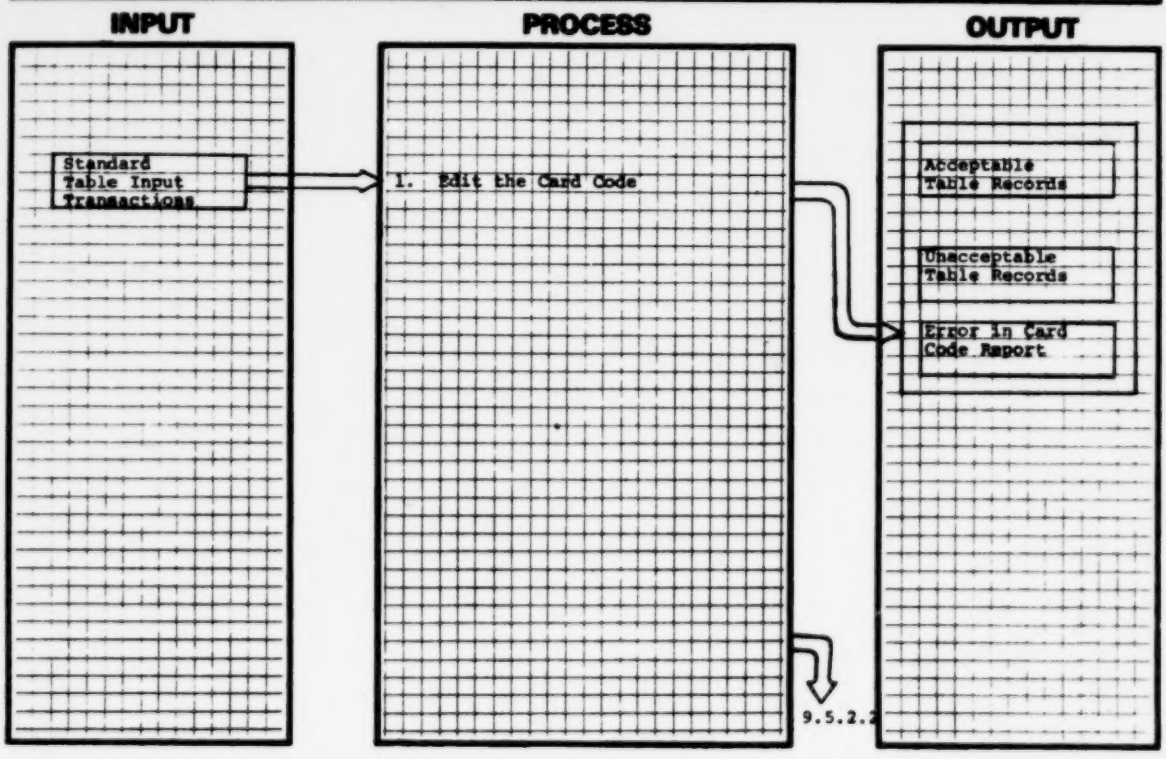
Diagram Type: Overview Subsystem: Standard Processing Date: 10-5-76 Page: 1 of 1
Diagram No.: 9.5.2 Description: Edit the Input Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The transactions are in sequence by card code, file ID, catalogue number, and data element value. There are three types of input data transactions. If the card code on a transaction is not in the acceptable range, the card is in error and is written to the Error In Card Code Report.	9.5.2.1	MSIS030	
2	Edit the first type of transaction which creates the Standard Error Message Table (EMT).	9.5.2.2		
3	Edit the second type of transaction which creates the Code Value Tables (CVT).	9.5.2.3		
4	Edit the third type of transaction which creates the Data Element Tables (DET).			

MODEL STATE INFORMATION SYSTEM

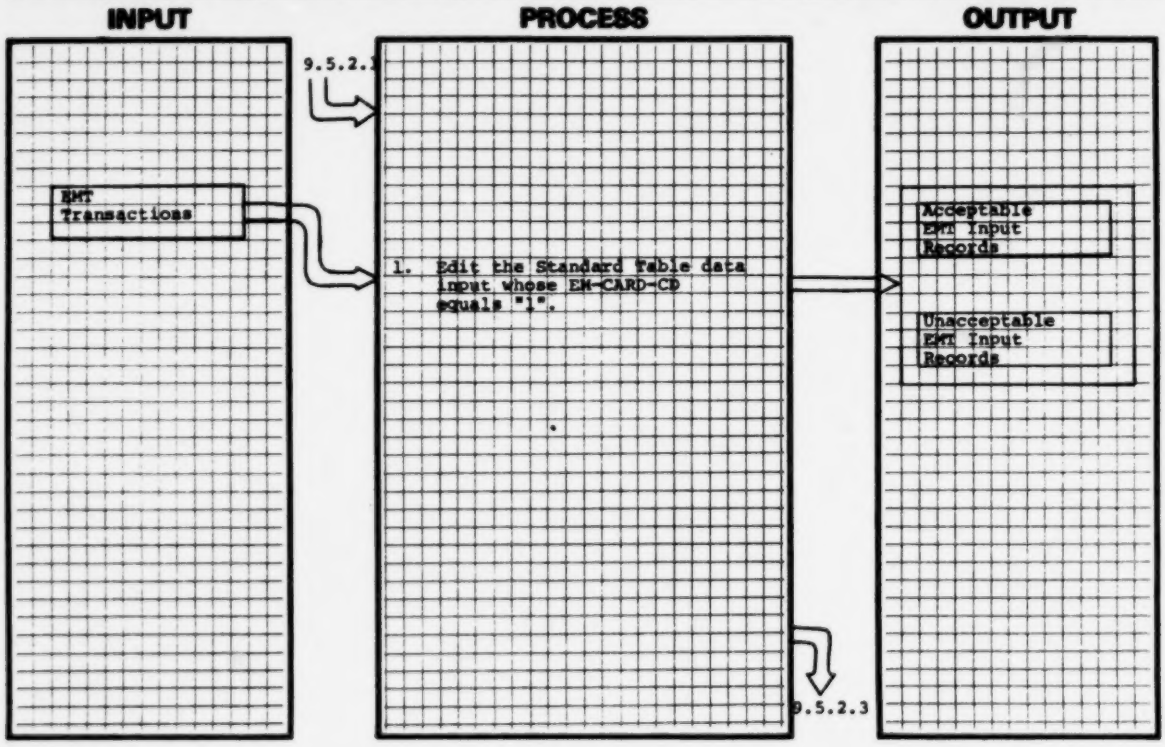
Diagram Type: Detail Subsystem: Standard Processing Date: 10-5-76 Page: 1 of 1
Diagram No.: 9.5.2.1 Description: Edit the Card Code



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Card Code. To be acceptable the Card Code must be "1", "2", or "3". If it is not equal, then just write the input transactions to the Error in Card Code Report and flag it as an error transaction.		MSIS030	102 103 104 205 206 201 308

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-5-76 **Page:** 1 **of** 1
Diagram No.: 9.5.2.2 **Description:** Edit the EMT Input Data

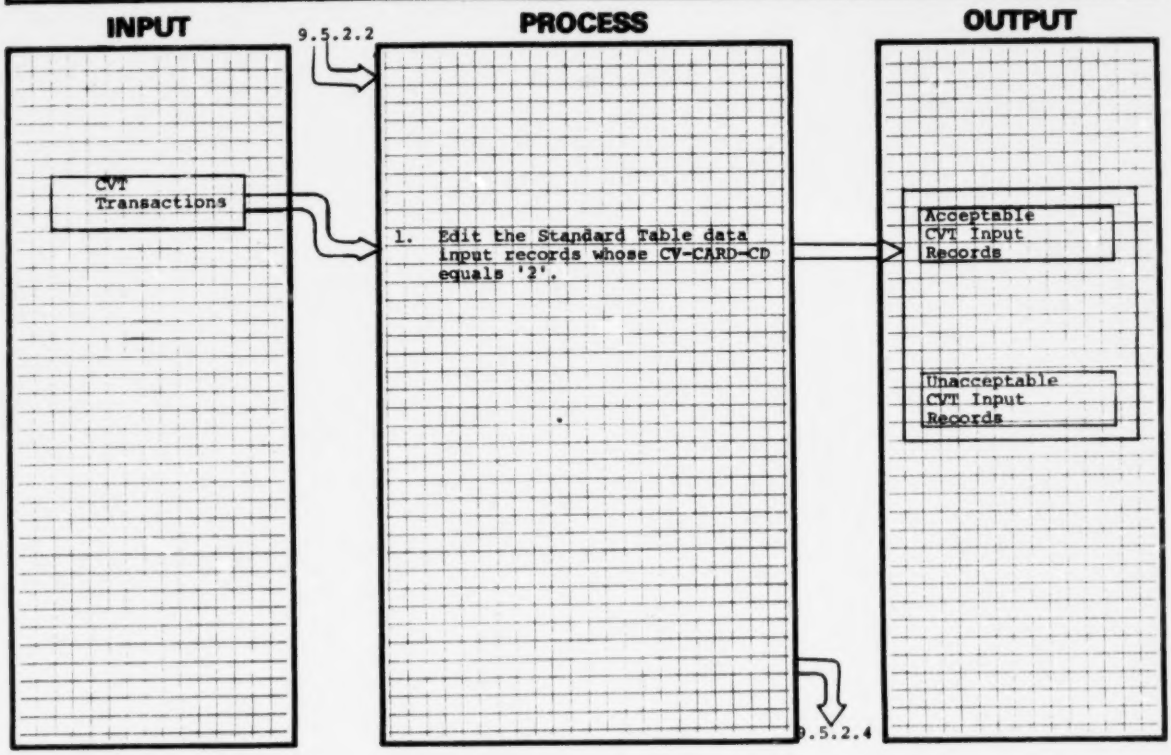


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the EM-CARD-CD equals '1', then the data on the record pertains to the Error Message Table (EMT). Edit the fields according to the criteria established in the Data Element Dictionary (DED). If there are no edit errors, then the record is acceptable and can be used in the creation of the EMT . If there are errors, then the record can not be used in the EMT . Both acceptable and non-acceptable records are printed on the Error Message Table Report.		MSIS030	305 302 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-5-76 **Page:** 1 **of** 1

Diagram No.: 9.5.2.3 **Description:** Edit the CVT Input Data

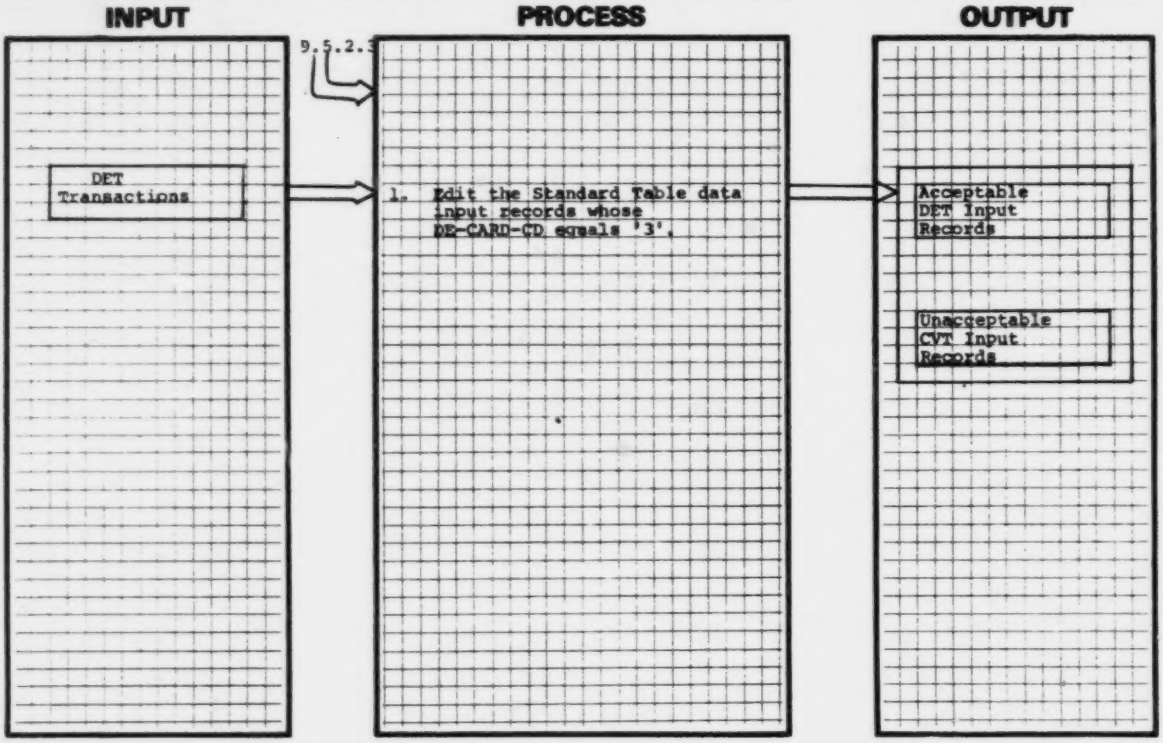


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the CV-CARD-CD equals '2', then the data on the record pertains to the Code Value Table (CVT). Edit the fields according to the criteria established in the Data Element Dictionary (DED). If there are no errors, then the record is acceptable and can be used in the creation of the CVT . If there are errors, then the record cannot be used in the CVT . Both acceptable and non-acceptable records are printed on the Code Value Table Report.		MSIS030	206 303 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-5-76 **Page:** 1 **of** 1

Diagram No.: 9.5.2.4 **Description:** Edit the DET Input Data

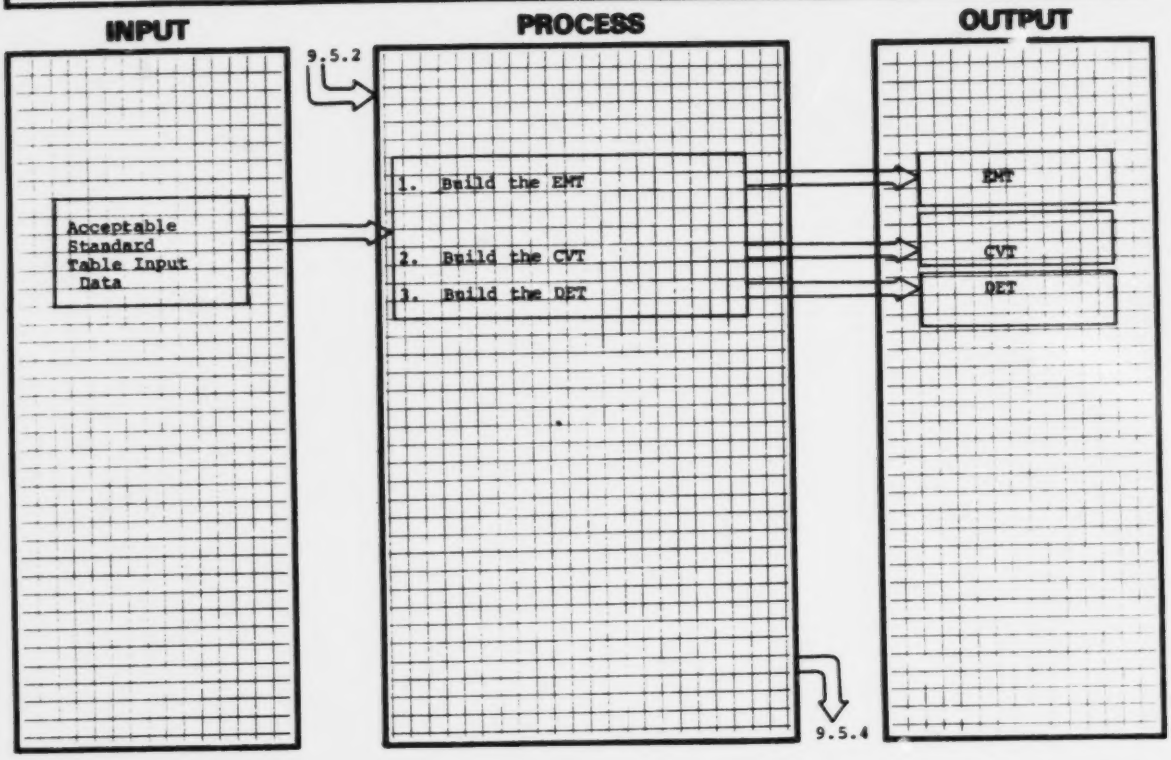


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the DE-CARD-CD equals '3' then the data on the record pertains to the Data Element Table (DET). Edit the fields according to the criteria established in the Data Element Dictionary (DED). If there are no errors, then the record is acceptable and can be used in the creation of the DET . If there are errors, then the record cannot be used in the DET . Both acceptable and non-acceptable records are printed on the Data Element Table Report.		MSIS030	201 304 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Standard Processing **Date:** 10-5-76 **Page:** 1 of 1

Diagram No.: 9.5.3 **Description:** Build the EMT, CVT, DET

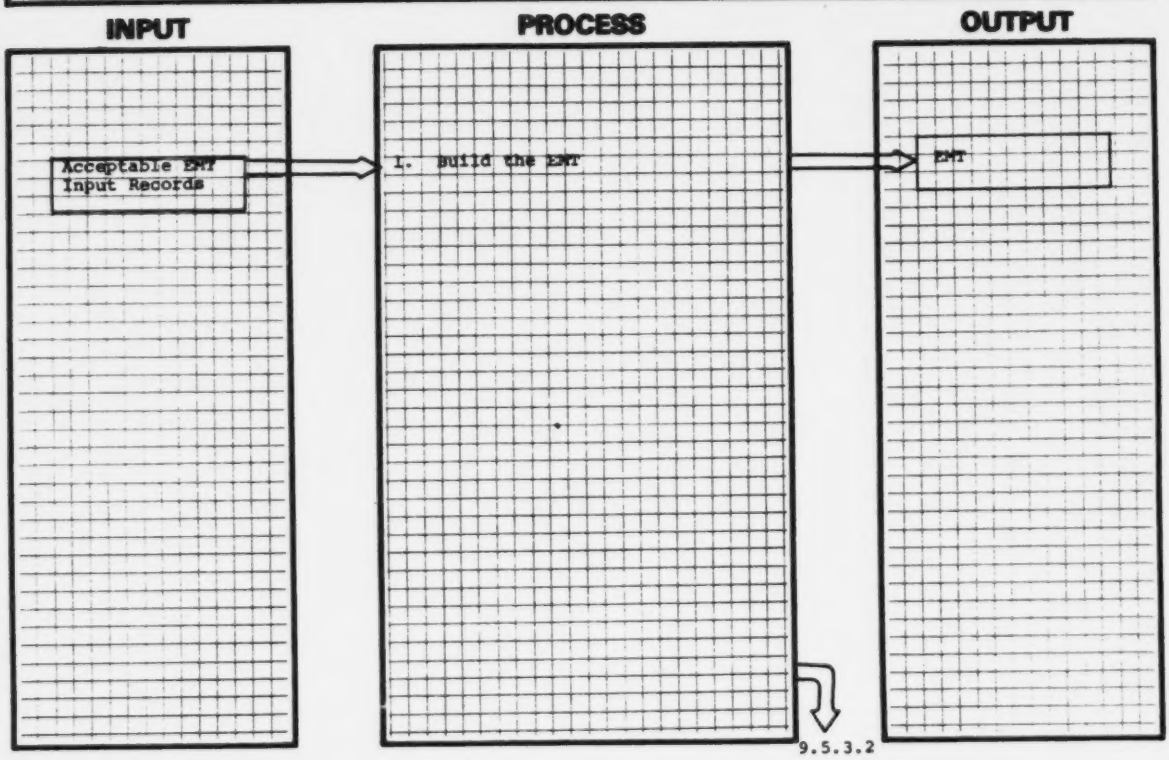


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	One Error Message Table File (EMT) will be created from the input data cards whose card code equals '1'. The Card Code is the first position on all the input data.	9.5.3.1	MSIS030	
2	One Code Value Table File (CVT) will be created for <u>each</u> unique file ID for each card type '2'.	9.5.3.2	MSIS030	
3	One Data Element Table (DET) will be created for <u>each</u> unique file ID for each card type '3'.	9.5.3.3	MSIS030	
	NOTE: Error codes are located in the Data Element Dictionary.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-5-76 Page: 1 of 1

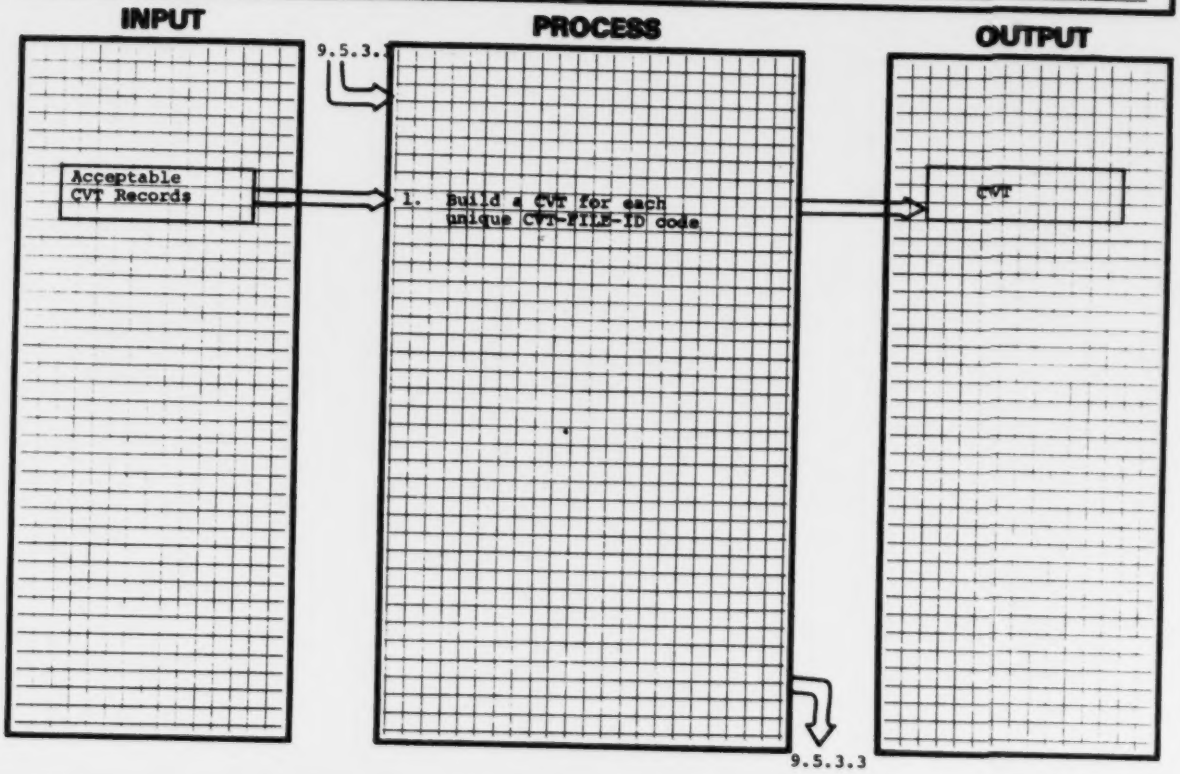
Diagram No.: 9.5.3.1 Description: Build the EMT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Acceptable Error Message records are written out to the Error Message Table File (EMT). This file is opened when the first input record is written to it and is closed when the last EM-CARD-CD '1' is processed and before the next type of table file is created.		MSIS030	205

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-5-76 **Page:** 1 of 1
Diagram No.: 9.5.3.2 **Description:** Build the CVT

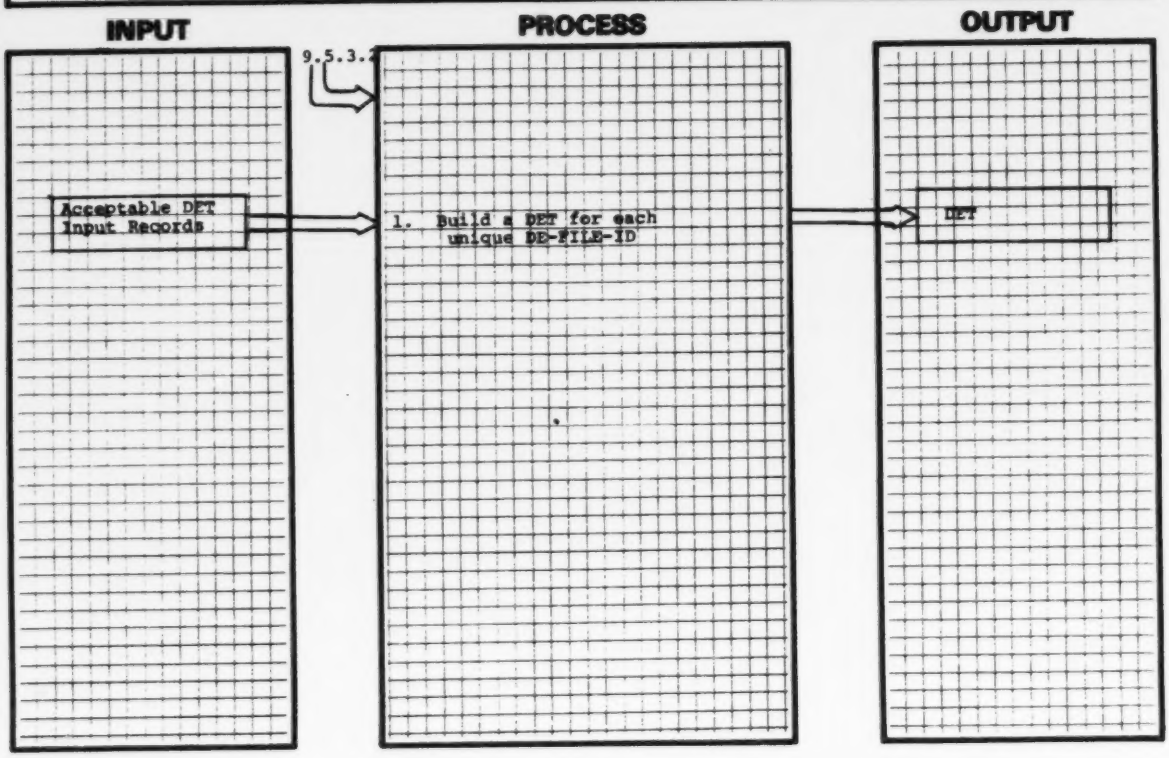


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	There are seven possible CV-FILE-ID values. For each value a separate Code Value Table File (CVT) will be built. FILE — CV-FILE-ID 1st File — EA 2nd File — LB 3rd File — MS 4th File — OM 5th File — PW 6th File — RG 7th File — VE The first file to be opened will be for "EA". When the last record for "EA" is written to the EA (CVT) the file will be closed. Then the file for "LB" will be opened. This opening, building, and closing of the files should continue, one file at a time, until all the type 2 CV-CARD-CD's are processed and all seven files are built. NOTE: A specific CVT is only built if there are acceptable input records for it.		MSIS030	206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Standard Processing **Date:** 10-5-76 **Page:** 1 of 1

Diagram No.: 9.5.3.3 **Description:** Build the DET

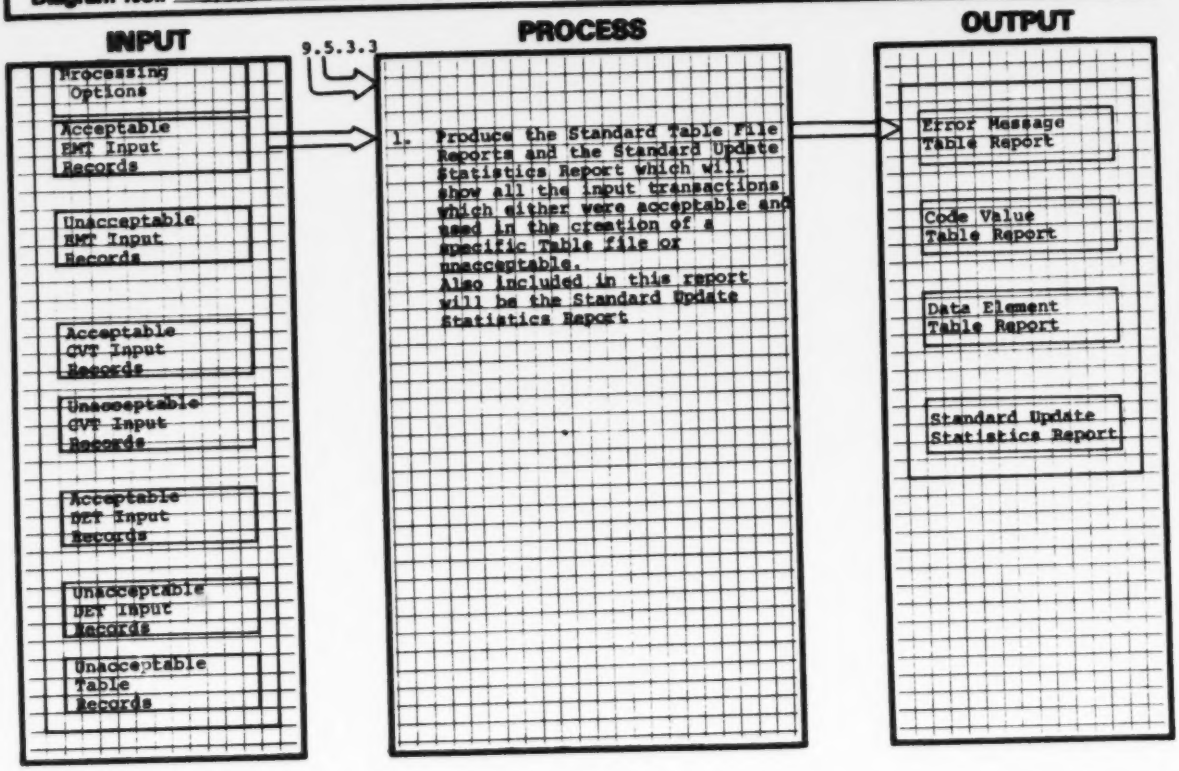


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	There are eleven possible DE-FILE-ID values. For each value, a separate Data Element Table File (DET) will be built. FILE — DE-FILE-ID 1st File — EA 2nd File — LB 3rd File — OM 4th File — PH 5th File — PS 6th File — PW 7th File — RG 8th File — SA 9th File — SH 10th File — VE 11th File — VI The first file will be opened for "EA". When the last "EA" is written to the EA Data Element Table, the file will be closed. Then the file for 'LB' will be opened. This opening, building, and closing should continue, one file at a time, until all the type 3 DE-CARD-CD's are processed and all eleven files are built. NOTE: A specific DET is only built if there are acceptable Input records for it.		MSIS030	201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Standard Processing Date: 10-5-76 Page: 1 of 1

Diagram No.: 9.5.4 Description: Produce the Standard Table File Reports


INPUT
9.5.3.3
PROCESS
OUTPUT
Processing Options
Acceptable EMT Input Records
Unacceptable EMT Input Records
Acceptable CVT Input Records
Unacceptable CVT Input Records
Acceptable DET Input Records
Unacceptable DET Input Records
Unacceptable Table Records
1. Produce the Standard Table File Reports and the Standard Update Statistics Report which will show all the input transactions which either were acceptable and used in the creation of a specific Table file or unacceptable.
Also included in this report will be the Standard Update Statistics Report
Error Message Table Report
Code Value Table Report
Data Element Table Report
Standard Update Statistics Report

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	There are three types of transactions and thus there are three report layouts. Due to the sort, all card type 1's will come first, then 2's, and then 3's. All Unacceptable Table Records (unaccepted Record Codes) will appear on Error in Card Code Report. For any unacceptable data records, precede the detail printing of the record with the wording "*ERROR*" as shown on the report layouts. Also included will be the Standard Update Statistics Report for each Table which was created. If the Processing Options date was an error, only the error message noted on HIPO 9.5.1 will be printed on this report.		MSIS030	300 302 303 304 309

F. Variances and Exemptions Subsystem (VAEX)

1. General Description

The purpose of this optional subsystem is to provide the state or region with a method for collection, maintenance and processing of data related to the process of granting variances or exemptions from State or Federal Regulations. The variances and exemptions are granted by states who have primary enforcement responsibility. For States that have not qualified for primary enforcement responsibility, the EPA region is authorized to grant variances and exemptions.

Variances and exemptions may not be granted if to do so would result in an "unreasonable risk to health". EPA has indicated that this is to be interpreted to mean that no variances or exemptions from bacteriological Maximum Contaminant Levels (MCL's) should be permitted. Variances and exemptions, therefore, will probably be permitted only from the chemical contaminant levels.

Variances and exemptions both have essentially the same result. Both effectively exempt a Public Water System from one or more requirements of the regulations. The difference lies in the circumstances under which they may be granted and the length of time allowed for compliance.

a. Variances

1. A variance from a maximum contaminant limit may be granted if a PWS is unable to comply because it is unable to make its raw water source safe for technological reasons. For example, many water systems in the southern part of Virginia draw their water from sources containing a naturally high concentration of fluoride. These systems will probably have to find an alternative source of water either by building a new treatment plant at another location or purchasing their water from a safe supplier. Until they are able to locate an alternative source and build the necessary treatment facilities or locate a safe supplier, they will need a variance from the fluoride contaminant limit.

2. A variance from the required treatment technique may be granted if a PWS can demonstrate that the treatment is not required because of the high quality of its raw water. In this case, the raw water is naturally free from a particular type of contaminant or contains low enough levels

that it is unnecessary to treat it for that particular type of contaminant.

The first type of variance will be terminated when the system comes into compliance with the standard. The second type may be terminated at any time upon a finding that the nature of the raw water sources has changed to the extent that treatment is required. In effect, both types of variances will be granted for indefinite time periods with no legislated termination date.

b. Exemptions

Exemptions may be granted to PWS's that are unable to comply for compelling reasons, mainly economic ones. In other words, an exemption is designed to solve the problem of systems that cannot afford to apply available treatment technology rather than the problem of systems that cannot make their water safe with even the best available treatment technology. Exemptions address an economic problem, variances, a technical problem. Unlike variances, moreover, exemptions cannot be granted for indefinite time periods. The act itself states that compliance must occur by certain dates.

Exemptions are clearly aimed at the economic problems of smaller systems. The states or regions can use exemptions to give smaller systems additional time to comply with the regulations, but the Act contains specific cutoff dates by which these systems must be in compliance regardless of the cost.

If a variance or exemption is granted, the state or EPA region must prescribe a schedule for compliance and interim control measures within one year of the date it is granted. The state or region must monitor actual progress against this schedule in the same way that it has to monitor compliance with the main body of drinking water regulations.

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2. VAEX Visual Table of Contents

Variances and Exemptions Subsystem (VAEX) 6
Update VEF .1
Edit Processing Options .1
Build Internal CVT .2
Edit Input Trans-actions .3
Update VEF Record .1
Verify Updated VEF Record .2
Build PMF Update Trans-actions .3
Produce Compliance Report .2
Update VEF .4
Build Deleted VEF Records .4
Produce Compliance in Arrears Report .3
Select From Updated VEF .5
Produce Standard Update Statistics Report .6
Select From VEF .4
Build Internal DET .1
Edit Processing Options .2
Select VEF Records .3
Build Selected VEF Report Records .4
Produce Selection Statistics Report .5
Produce Condensed Report .5
Produce Case History Report .6

Diagram Type: VTOC

Diagram No: 6

Subsystem: Variances and Exemptions

Description: Variance and Exemptions Subsystem VTOC

VISUAL TABLE OF CONTENTS

6 Variances and Exemptions Subsystem
6.1 Update Variances and Exemptions File (VEF)
6.1.1 Edit Processing Options
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6.1.3 Edit Input Transactions
6.1.4 Update Variances and Exemptions File (VEF)
6.1.4.1 Update Variances and Exemptions File (VEF) Record
6.1.4.2 Verify Updated Variances and Exemptions File (VEF)Record
6.1.4.3 Build Public Water File (PWF) Update Transactions
6.1.4.4 Build Deleted Variances and Exemptions File (VEF) Records
6.1.5 Select from Updated Variances and Exemptions File (VEF)
6.1.6 Produce Standard Update Statistics Report
6.2 Produce Compliance Report
6.3 Produce Compliance in Arrears Report
6.4 Select from Variances and Exemptions File (VEF)
6.4.1 Build Internal Data Element Table (DET)
6.4.2 Edit Processing Options
6.4.3 Select Variances and Exemptions File (VEF) Records
6.4.4 Build Selected Variances and Exemptions File (VEF) Report Records
6.4.5 Produce Selection Statistics Report
6.5 Produce Condensed Report
6.6 Produce Case History Report

3. VAEX Subsystem Overview

The VAEX subsystem must maintain variances and exemption information for three purposes. First, this type of information is required by the Federal Reporting Subsystem (FEDR) for reporting to EPA. Second, information is required for monitoring progress against compliance schedules specified in particular variances and exemptions for particular Public Water Systems. Last, any variance or exemption data needed for determining compliance will be generated by this subsystem and transmitted to the Public Water File.

The major functions of VAEX are:

- Data Entry and Updating
- Selection and Reporting
- Providing data to the Public Water System Inventory Subsystem.

The main features of the VAEX subsystem are:

- Sequential, variable length file;
- Batch processing;
- Flexibility in reporting with respect to selection, sorting, summarizing;
- Subsystem is optional and can be used if needed.

The source of transactions to create and maintain the Variances and Exemptions File (VEF) is the administrative unit responsible for the granting and monitoring of variances and exemptions.

All variances and exemptions on the VEF are identified by a sequential identification number. Accordingly, transactions refer to a VEF record by that number in positions 1 to 5 of the record. There are four types of transactions: addition of a new VEF record, milestone creations, changes to data elements in an existing record, and deletion of an existing record. All transactions are identified by a two-digit transaction code in positions 6 to 7 of the record. The transaction key, positions 1-7, is a combination of VAEX-ID and transaction code. Reference input forms layout in Exhibit VAEX.100, 101, 107.

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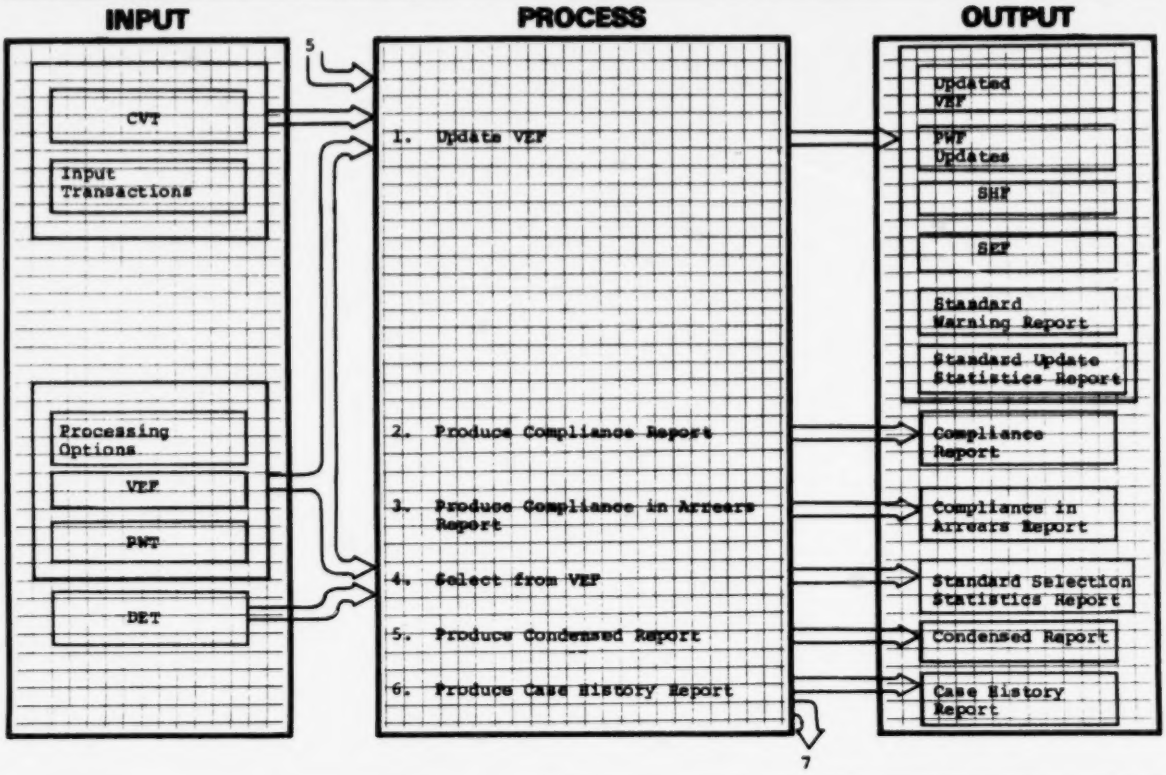
MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1
Diagram No.: 6 Description: Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Update the Variances & Exemptions File (VEF) and select records for further processing.	6.1	VAEX010	
2	Produce the Compliance Report from the externally sorted temporary Compliance File (built by VAEX010).	6.2	VAEX020	
3	Produce the Compliance in Arrears Report from the externally sorted temporary Compliance in Arrears File (built by VAEX020).	6.3	VAEX030	
4	Select VEF Records for Reports Production. The selected records are written to a temporary VEF Report File.	6.4	VAEX040	
5	Produce the Condensed Report from an externally sorted VEF Report File (built by VAEX040).	6.5	VAEX041	
6	Produce the Case History Report from an externally sorted VEF Report File (built by VAEX040).			
	Note: Only major files are shown on this overview.			

NARRATIVE

SUBSYSTEM: Variances and Exemptions
PROGRAM NAME: VAEX010
DATE: JANUARY 12, 1977

I. OBJECTIVES:

The objective of this program is to read and validate the update transactions for the Variances and Exemptions File (VEF). Valid transactions will be used to update the VEF and to generate update transactions for the Public Water File (PWF) and the Standard History File (SHF). This program should also build intermediate files for the production of the Variances and Exemptions Compliance Schedule Report, Compliance in Arrears Report, and Case History Reports.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Variances and Exemptions File	VEF-RECORD		VAEX.212
2.	Input Transactions	VEFI-CREATE-DELETE-RECORD	VAEX.100 VAEX.107	VAEX.200
		VEFI-UPDATE-RECORD	VAEX.100	VAEX.201
		VEFI-ABSTRACT-RECORD	VAEX.100 VAEX.107	VAEX.202
		VEFI-MILESTONE-CREATION	VAEX.101	VAEX.203
		VEFI-MILESTONE-DESCRIPTION	VAEX.101	VAEX.204
		VEFI-REPORTING-RECORD	VAEX.101	VAEX.205
3.	Code Value Table	CVT-RECORD		MSIS.206
4.	Public Water Table	PWT-RECORD		PWSI.201
		PWT-HEADER-RECORD		PWSI.234

B. Processing Options Record:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	VEFI-VE10-PROC-RECORD	VAEX.102	VAEX.206

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Variances and Exemptions File	VEF-RECORD	VAEX.212
2.	Public Water System Inventory Update Transactions	PWFI-TRAN-15	PWSI.228
3.	Standard History File	SHF-RECORD MSI-PROC-SHF-RECORD	MSIS.202 MSIS.203
4.	Standard Error File	SEF-RECORD MSI-PROC-SEF-RECORD	MSIS.207 MSIS.208
5.	Variances and Exemptions Compliance Arrears File	VEFI-COMP-ARREARS-DATE-RECORD	VAEX.208
		VEFI-COMP-ARREARS-RECORD	VAEX.217
6.	Variances and Exemptions Compliance File	VEFI-COMP-DATE-RECORD	VAEX.211
		VEFI-COMP-RECORD	VAEX.209
7.	Variances and Exemptions Report File	VEFI-REPORT-DATE-REPORT	VAEX.213
		VEFI-REPORT-RECORD	VAEX.210

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Update Statistics Report	MSIS.300 MSIS.309
2.	Standard Warning Report	MSIS.310

C. Turnaround Documents:

Not applicable

IV. FUNCTIONS:

1. Processing Options are read and verified.

2. The Code Value Table (CVT) is read and an internal CVT is built which is used to edit fields in the input transactions.

3. Input transactions are read and verified after being sorted by VE-ID, Card Code, and target date. Invalid transactions are written to the Standard Error File (SEF).

4. Valid transactions are applied to the Variances and Exemptions File (VEF). If an Add transaction matches a record already on the VEF, it is an error and an SEF record is written. For all other Add transactions a new VEF record is created. Change and Delete transactions that do not match existing VEF records are written to the SEF. When a VEF record is updated, a Standard History File (SHF) update record is written. After a record has been updated, the data element "LAST-UPDATE-DATE" is modified. If a Variance or Exemption is granted or deleted, then a Public Water File (PWF) update transaction is created and written to the PWF update file. The expiration date of each VEF record is checked to see if it is within the current compliance period. If so, then a message is written on the Standard Warning Report to the effect that this particular VEF record is due for deletion. If the expiration date is older than the current date, then the record is deleted and a message is written on the Standard Warning Report that the record has been deleted.

5. Every VEF record is examined for overdue milestones and for target dates due within the next compliance period. When these are found, records are written on the Compliance Schedule File and the Compliance in Arrears File.

6. The Standard Update Statistics Report is produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options.
2. Variances and Exemptions File (VEF) record creation and maintenance.
3. VEF Compliance Schedule milestone maintenance.

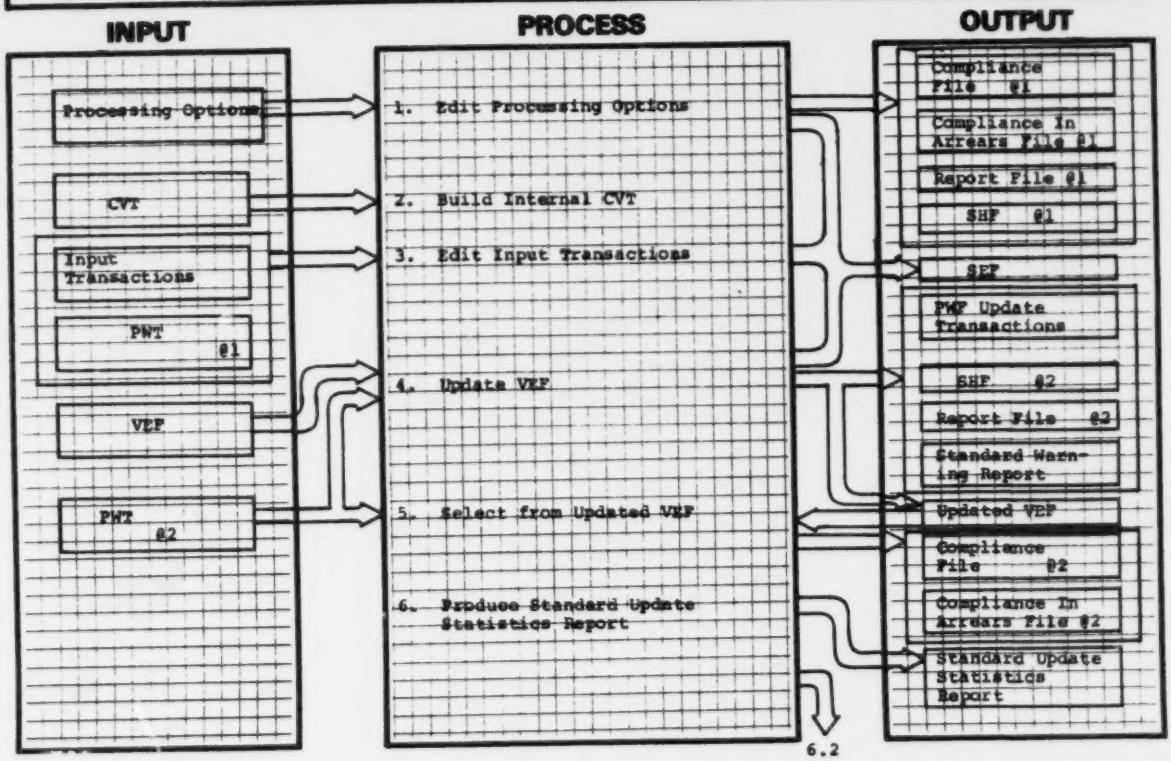
B. Data Element Descriptions:

1. Variances and Exemptions File (VEF).

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 1

Diagram No.: 6.1 **Description:** VEF Data Entry and Update

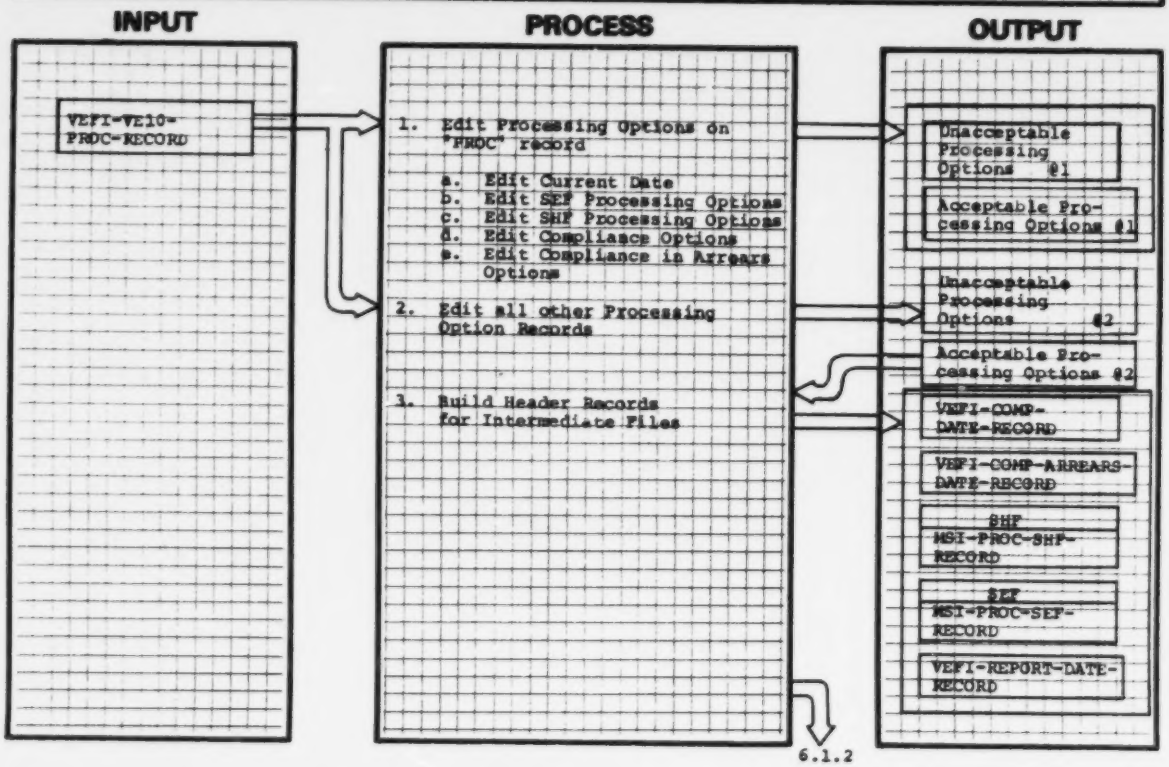


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options for this program are edited and header records are built for several intermediate files and the Standard History File (SHF).	6.1.1	VAEX010	
2	An Internal Code Value Table (CVT) is built from the VE and MS CVT.	6.1.2	VAEX010	
3	Input Transactions (presorted by VE-ID, transaction code and target date) are read and edited. Errors are written to the Standard Error File (SEF).	6.1.3	VAEX010	
4	The Variances and Exemptions File (VEF) is updated according to the input transactions. Errors are written to the SEF for error processing. Updates cause SHF records to be built as well as Public Water File (PWF) update transactions. In addition, expiration and EPA-required-field warnings are produced. Deleted VEF records are written to the Variances and Exemptions Report file for processing by VAEX050 (Case History Report).	6.1.4	VAEX010	
5	The updated VEF records are selected if: a. Any milestone target dates are within the specified compliance period. b. Any milestone target dates are later than the specified compliance in arrears date. Information from the Public Water Table (PWT) is included in the selected records, which are then written to temporary files for processing by VAEX020 (Compliance Schedule Report) and VAEX030 (Compliance in Arrears Report).	6.1.5	VAEX010	
6	The Standard Update Statistics Report is produced. NOTE: Error codes are located in the Data Element Dictionary (DED).	6.1.6	VAEX010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 2

Diagram No.: 6.1.1 **Description:** VEF Data Entry and Update



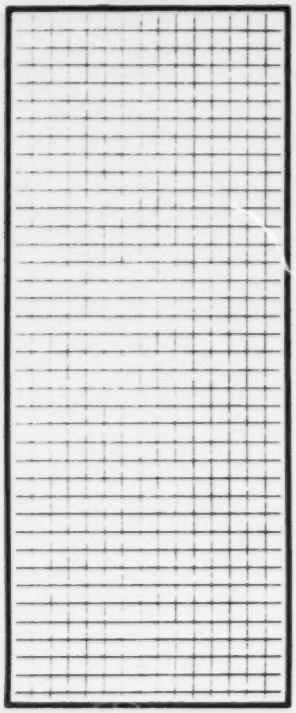
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Record with 'PROC' in positions 1-4 of the record as follows: a. Current date must be a valid date. If it is not, a message will be written and processing will be terminated. If the date is valid, it is to be converted to Julian mode for later use. b. Standard Error File (SEF) Processing Options may be "Y" or "N" for either. If invalid, default to "N" for both. c. The Standard History File (SHF) Processing Options may equal "1" thru "4". If invalid, default to "1". d. Compliance options which include: 1) Whether to produce report - "Y" or "N" 2) Compliance Period (from date-to-date) If invalid, defaults are to produce the report ("Y") using next month as the Compliance record. After the edit, convert compliance period to Julian mode for later use. e. Compliance in Arrears Options which include: 1) Whether to produce report - "Y" or "N" 2) Compliance in Arrears Date If invalid, defaults are to produce the report ("Y") using the current date as the Compliance in Arrears date. After the edit, convert the Compliance in Arrears date to Julian mode for later use.		VAEX010	102 206

MODEL STATE INFORMATION SYSTEM

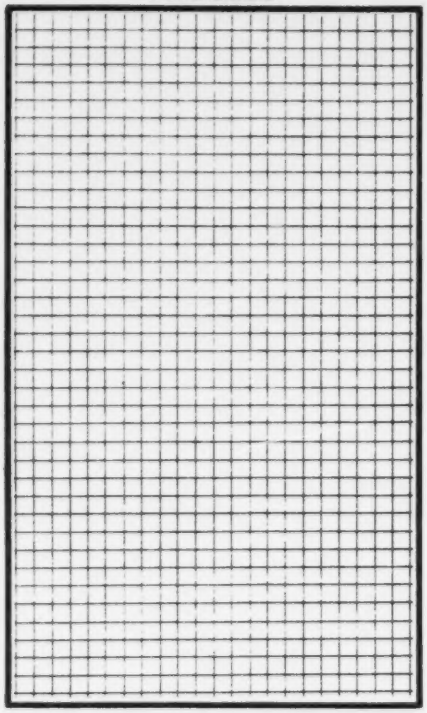
Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 2 of 2

Diagram No.: 6.1.1 Description: VEF Data Entry and Update

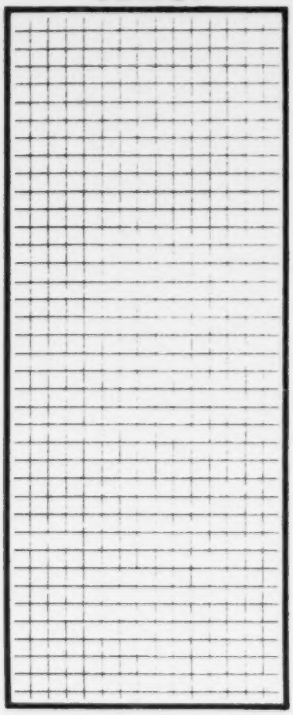
INPUT



PROCESS



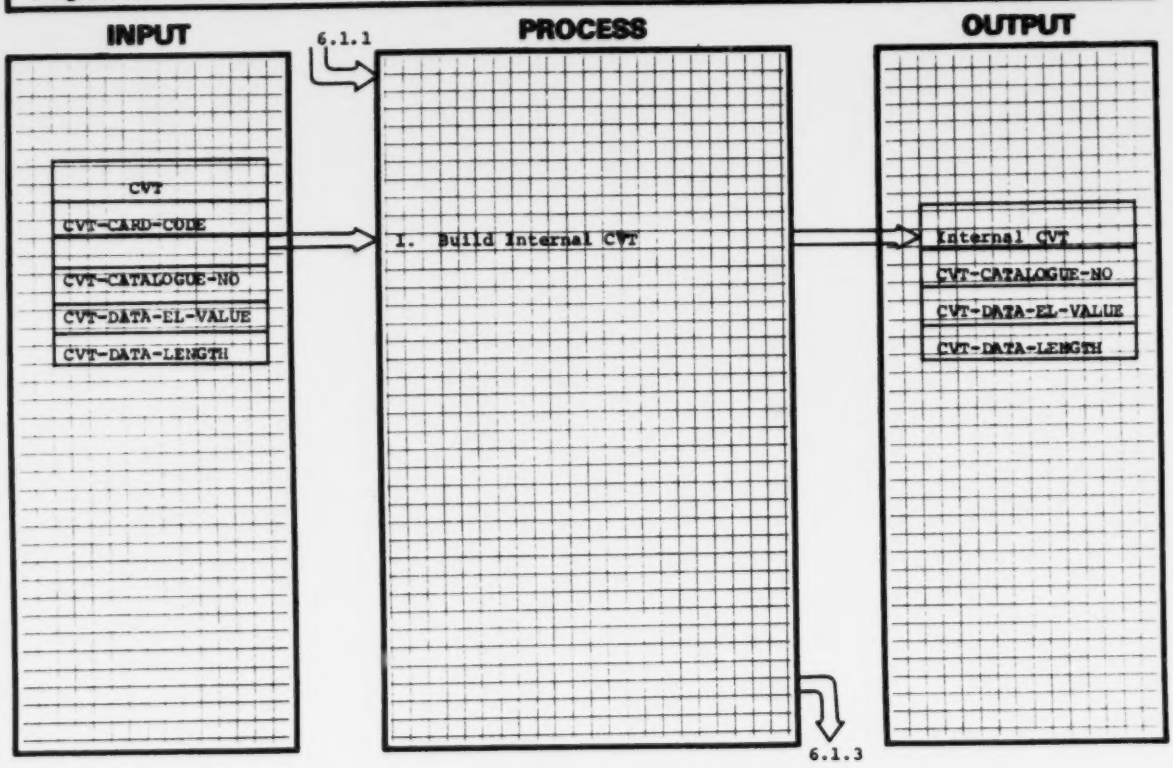
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	If no 'PROC' record exists, or if multiple 'PROC' records exist, processing should be terminated.			
2	Edit all other Processing Option Records. All of these records are in error and processing should be terminated.			102 206
3	Each of the intermediate files produced by this program utilizes the first record to pass control information. The VEFI files use a similar date record format. If a report is not to be produced, use "000000" as the current date, then close the file. Use "LOW VALUES" for SORT-FIELDS 1 and 2. For the SEF and SHF PROC-RECORD, use "LOW VALUES" for PROC-ID and "VE" for FILE-ID. If processing is to be terminated due to invalid Processing Options, all but the "LOW VALUES" field should be blank. The VEFI-REPORT-DATE-RECORD is used for the file which may contain deleted Variances and Exemptions File (VEF) records. Use "LOW VALUES" for the 30 character sort field and a "Y" for VEFI-CASE-HISTORY-FLAG. NOTE: Unacceptable Processing Options are written on the Standard Update Statistics Report (See HIPO 6.1.6).		VAEX010	208 211 MSIS. 208 MSIS. 200 213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1
Diagram No.: 6.1.2 Description: VEF Data Entry and Update

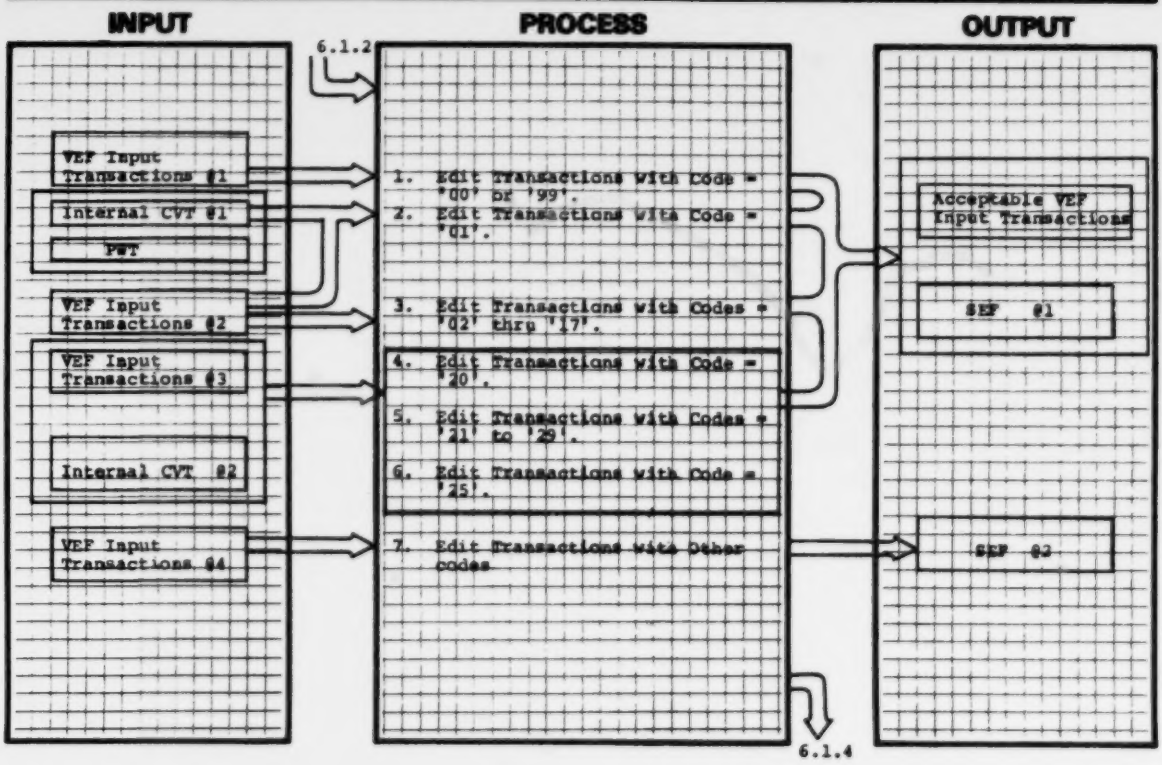


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of data element edit values. Appropriate records are stored in an internal CVT to be used as edit criteria when certain fields are verified. The edit values are contained in two external CVT files. One has only the values for editing data elements only existing on the Variances and Exemptions File (VEF) and thus is stored in its entirety. The other has values for common data elements, existing in more than one file, some of which belong to the VEF. Only values for contaminant ID and milestone codes are stored from this common file.		VAEX010	MSIS. 206 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1

Diagram No.: 6.1.3 Description: VEF Data Entry and Update

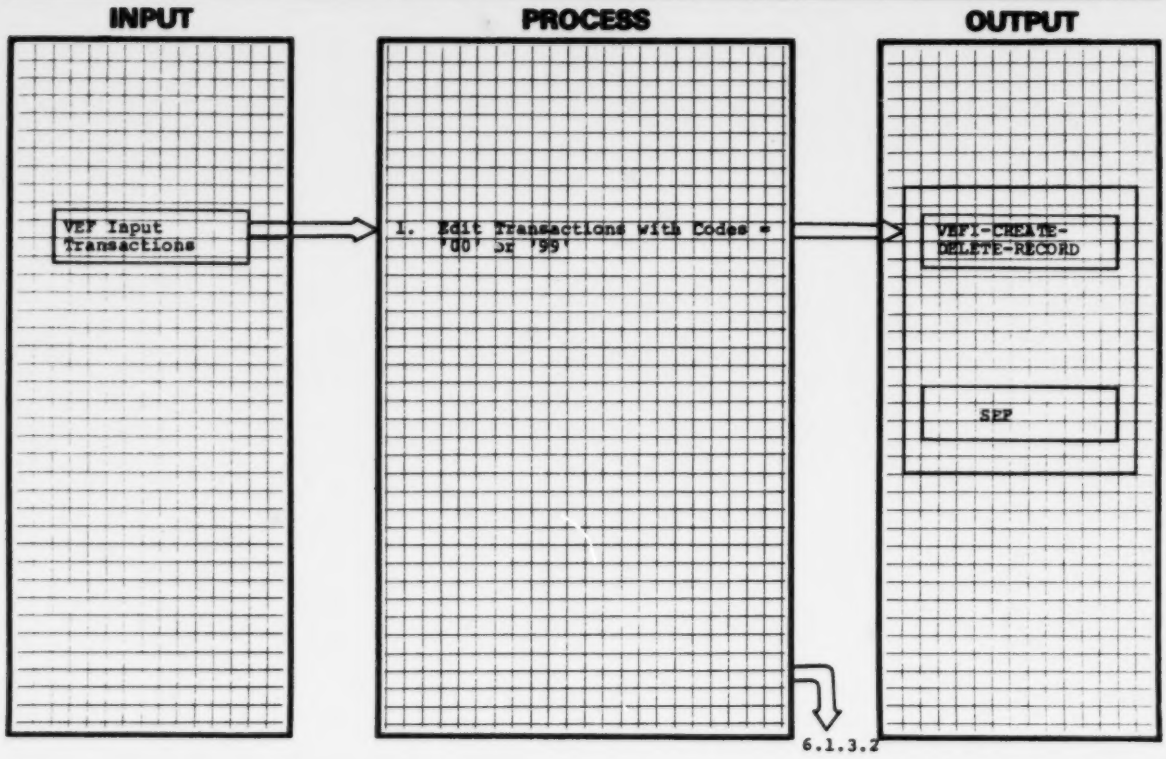

INPUT
PROCESS
OUTPUT
6.1.2
VEF Input Transactions #1
Internal CVT #1
PST
VEF Input Transactions #2
VEF Input Transactions #3
Internal CVT #2
VEF Input Transactions #4
1. Edit Transactions with Code = '00' or '99'.
2. Edit Transactions with Code = '01'.
3. Edit Transactions with Codes = '02' thru '17'.
4. Edit Transactions with Code = '20'.
5. Edit Transactions with Codes = '21' to '24'.
6. Edit Transactions with Code = '25'.
7. Edit Transactions with Other codes
Acceptable VEF Input Transactions
SEF #1
SEF #2
6.1.4

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Transactions with Code = '00' or '99' in positions 6-7.	6.1.3.1	VAEX010	
2	Edit the Transactions with Code = '01' in positions 6-7.	6.1.3.2	VAEX010	
3	Edit the Transactions with Codes = '02' thru '17' in positions 6-7.	6.1.3.3	VAEX010	
4	Edit the Transactions with Code = '20' in positions 6-7.	6.1.3.4	VAEX010	
5	Edit the Transactions with Codes = '21' thru '24' in positions 6-7.	6.1.3.5	VAEX010	
6	Edit the Transactions with Code = '25' in position 6-7.	6.1.3.6	VAEX010	
7	Edit the Transactions with Codes not equal to the previously mentioned codes in positions 6-7.	6.1.3.7	VAEX010	
NOTE:	All transactions in error generate a record in the Standard Error File (SEF). The specific error codes to be used may be found in the Data Element Dictionary (DED).			
NOTE:	The dollar sign ($) in the left most position of an otherwise blank field denotes value reinitialization and is an acceptable value for all elements, unless otherwise noted.			
NOTE:	Edit criteria is located in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 1

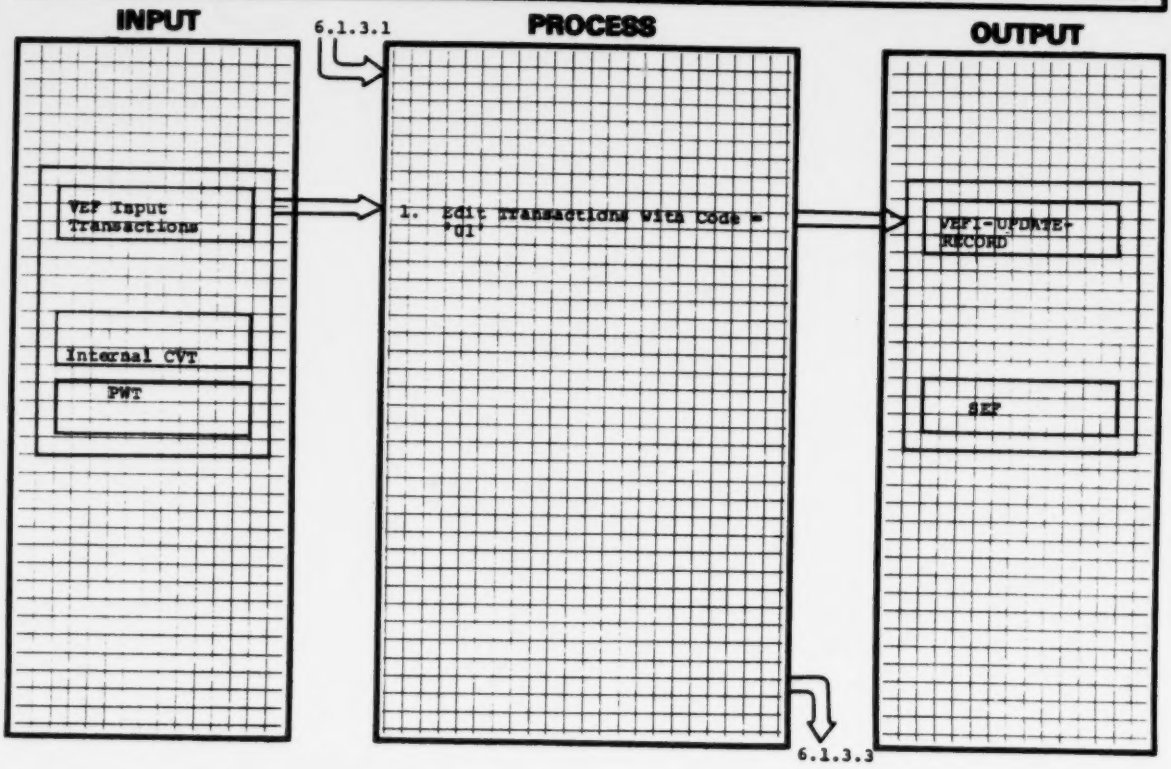
Diagram No.: 6.1.3.1 **Description:** VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction triggers creation (code 00) of a new record for the Variances and Exemptions File (VEF) or the deletion (code 99) of a pre-existing VEF Record. The transaction is edited as follows: a. The VE-ID must be a five character alphanumeric string with no special characters. b. The create-delete flag must equal 'Y'. Transactions in error are written to the Standard Error File (SEF). The actual creation or deletion of the VEF Record takes place in the update section of the program (see HIPO 6.1.4.1).		VAEX010	200 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1
Diagram No.: 6.1.3.2 Description: VEF Data Entry and Update

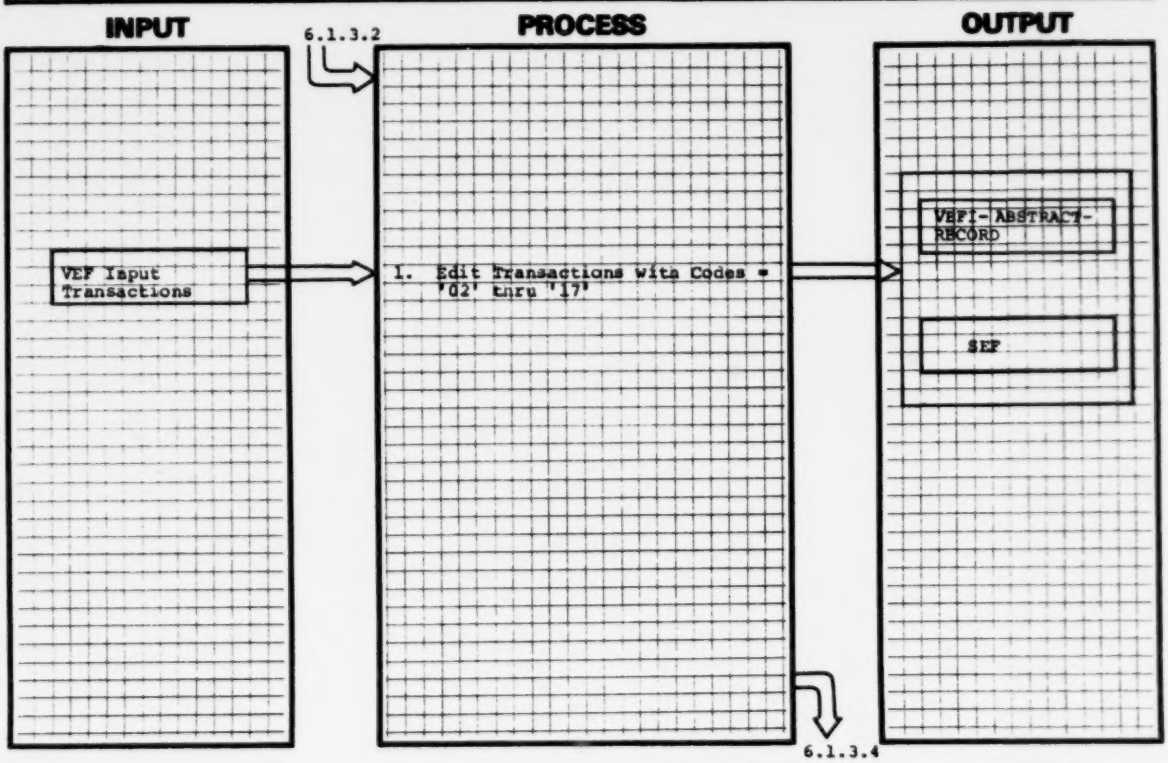


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction adds or updates values relating to a pre-existing Variances and Exemptions File (VEF) Record. Only non-blank, validated fields will be used to update. The transaction is edited as follows: a. The VE-ID must be a five character alphanumeric string with no special characters. b. Reason & Status Codes and Contaminant ID are checked for validity with the Internal Code Value Table (CVT). c. A two part check is performed on the dates: 1) Each must be a valid date 2) The expiration date must be later than the effective date d. VE Type is a hard coded check - "V" or "E" is acceptable. e. PWS-ID is checked against entries in the Public Water Table (PWT). The dollar sign, indicating value reinitialization may not be used for VE-ID or PWS-ID. If a transaction having a code = '00' with the same VE-ID was previously rejected as a duplicate VE-ID, this entire transaction is also rejected. Transactions in error are written to the Standard Error File (SEF).		VAEX010	201 MSIS. 207 PWSI. 201 MSIS. 206 DED PWSI. 234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 **of** 1

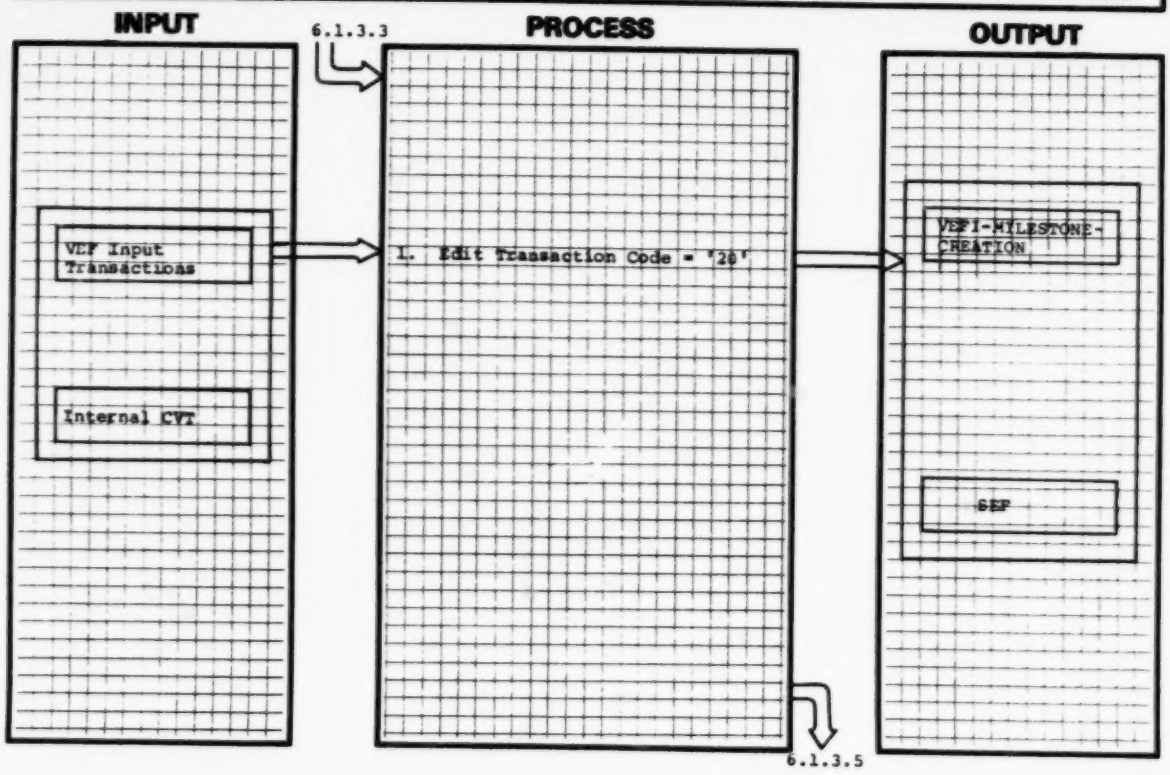
Diagram No.: 6.1.3.3 **Description:** VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	These codes are for the 16-line case abstract for each Variance or Exemption. The VE-ID must be a five character alphanumeric string with no special characters. If a transaction having a code = '00' with the same VE-ID was previously rejected as a duplicate VE-ID, these entire transactions are also rejected. Transactions in error are written to the Standard Error File (SEF).		VAEX010	202 DED

MODEL STATE INFORMATION SYSTEM

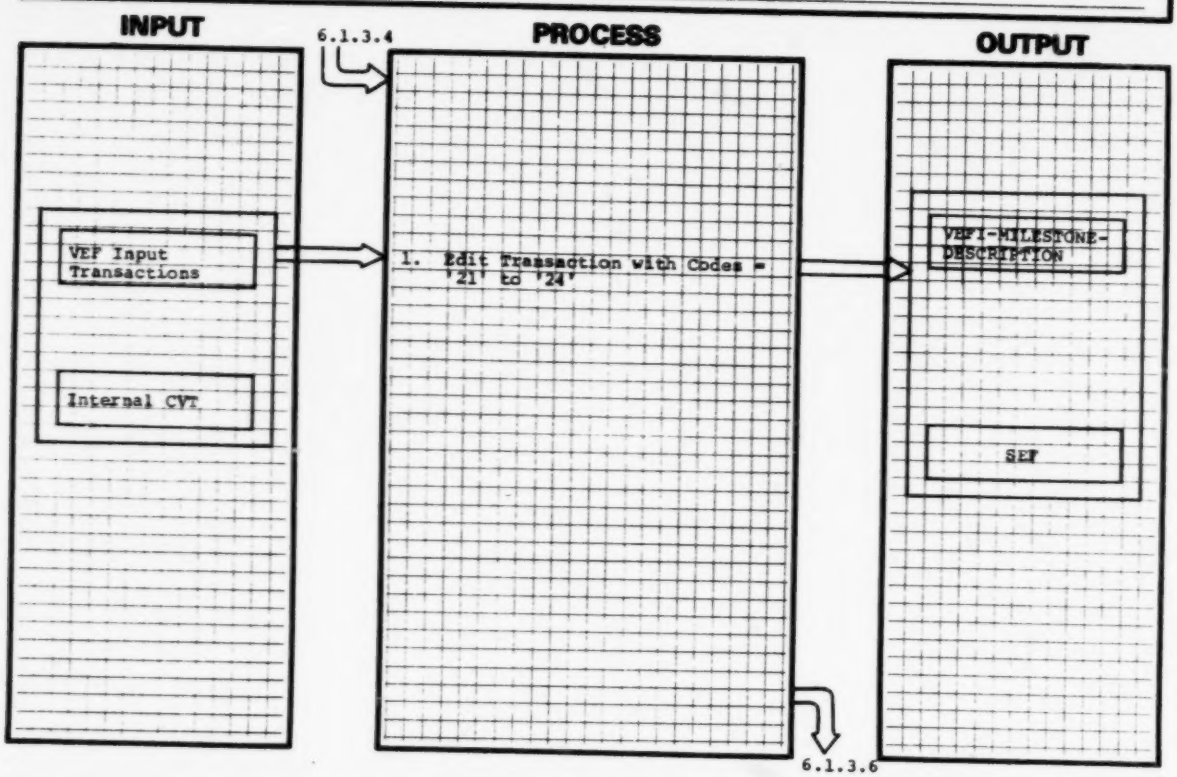
Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 1
Diagram No.: 6.1.3.4 **Description:** VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This code is used for creating a milestone and is edited as follows: a. The VE-ID must be a five character alphanumeric string with no special characters. b. The target date must be a valid date. c. The milestone code is checked for validity with the Internal Code Value Table (CVT). If a transaction having a code = '00' was previously rejected as a duplicate VE-ID, this entire transaction is also rejected. If any of the above is incorrect, the entire transaction is in error and is written to the Standard Error File (SEF). The dollar sign, indicating value reinitialization may not be used on this transaction.		VAEX010	203 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

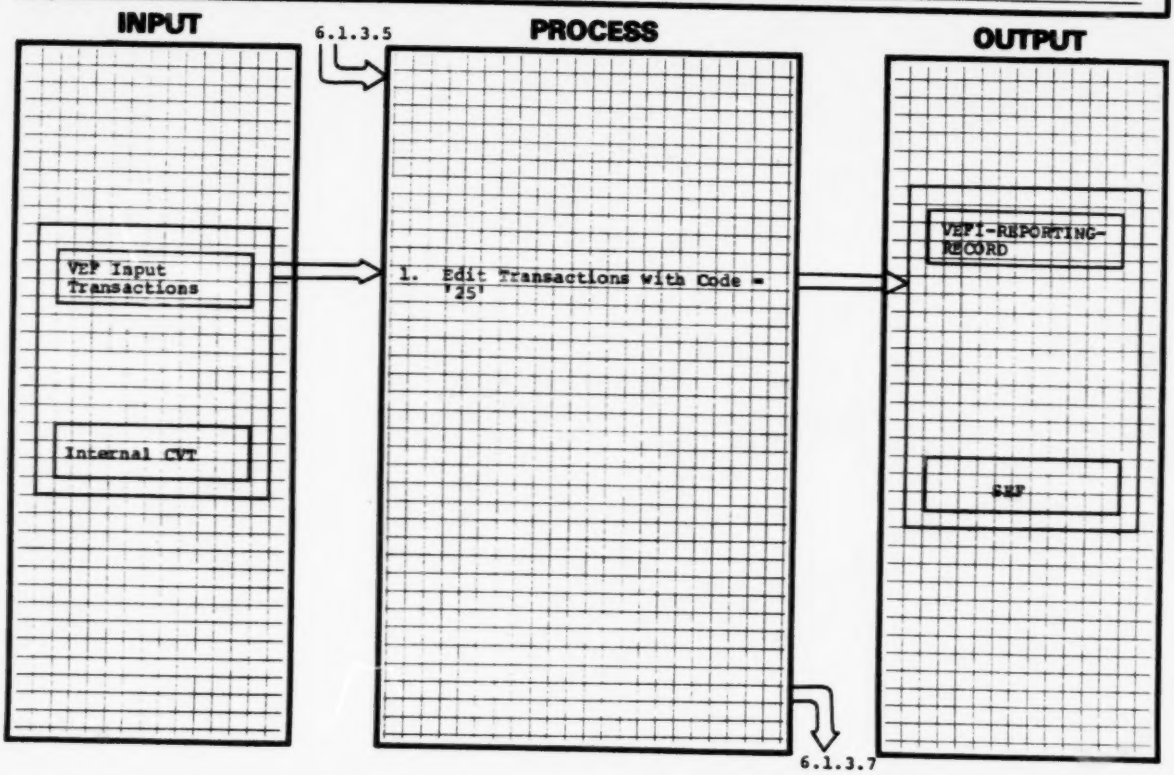
Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 **of** 1
Diagram No.: 6.1.3.5 **Description:** VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	These codes are used for entering the 4 line milestone abstract and are edited as follows: a. The VE-ID must be a five character alphanumeric string with no special characters. b. The target date must be a valid date. c. The milestone code is checked for validity against the Internal Code Value Table (CVT). The milestone abstracts are character strings and need not be edited. If a transaction having a code = '00' with the same VE-ID was previously rejected as a duplicate VE-ID, these entire transactions are also rejected. If any of the above are incorrect, the entire transaction is in error and should be written to the Standard Error File (SEF).		VAEX010	204 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

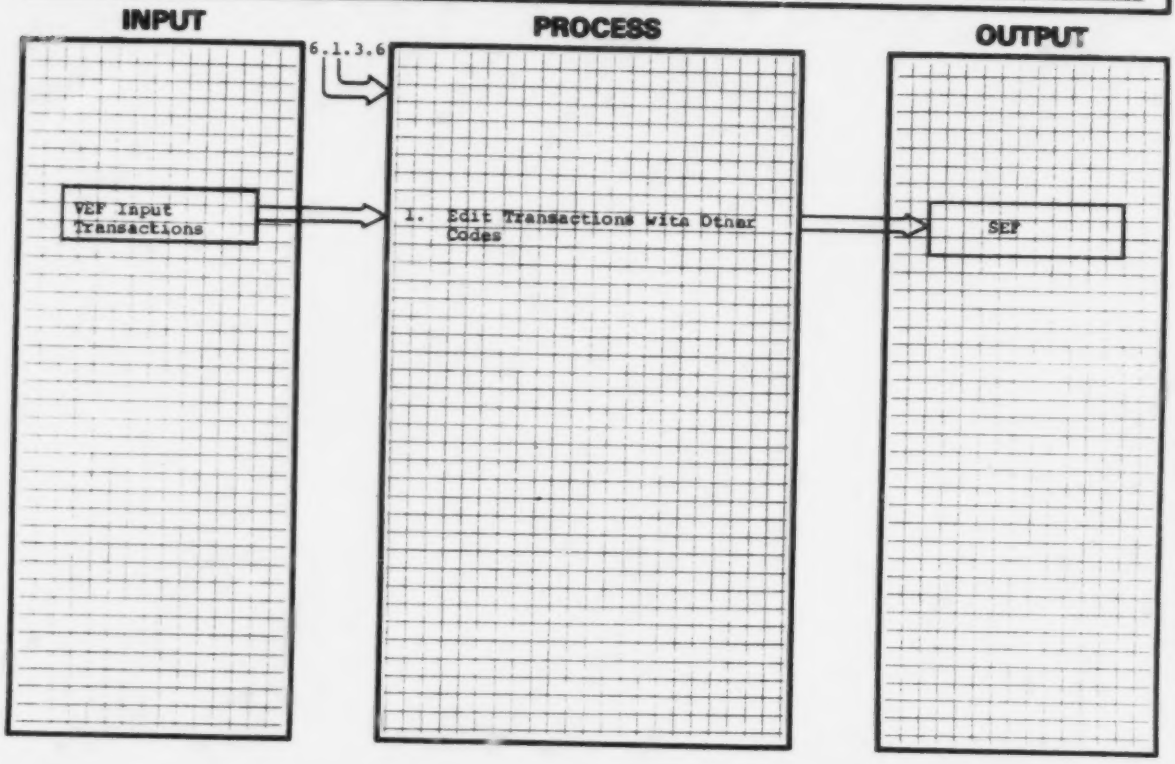
Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 1
Diagram No.: 6.1.3.6 **Description:** VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This code is used to: a. Report the Milestone Attained Date or b. Report the Milestone Delay Reason Code or c. Delete the Milestone by a special Delay Reason Code and is edited as follows: 1) The target date and attained date must be valid dates. 2) The milestone code and delay code are checked for validity against the Internal Code Value Table (CVT) If a transaction having a code = '00' with the same VE-ID was previously rejected as a duplicate VE-ID, this entire transaction is also rejected. If any of the above are incorrect, the entire transaction is in error and should be written to the Standard Error File (SEF). In addition, if both VEFI-MILESTONE-ATTAINED-DATE and VEFI-DELAY-CODE are blank, nothing would happen for this transaction. The user is warned of this fact by writing the transaction on the SEF.			205 MSIS 207

MODEL STATE INFORMATION SYSTEM

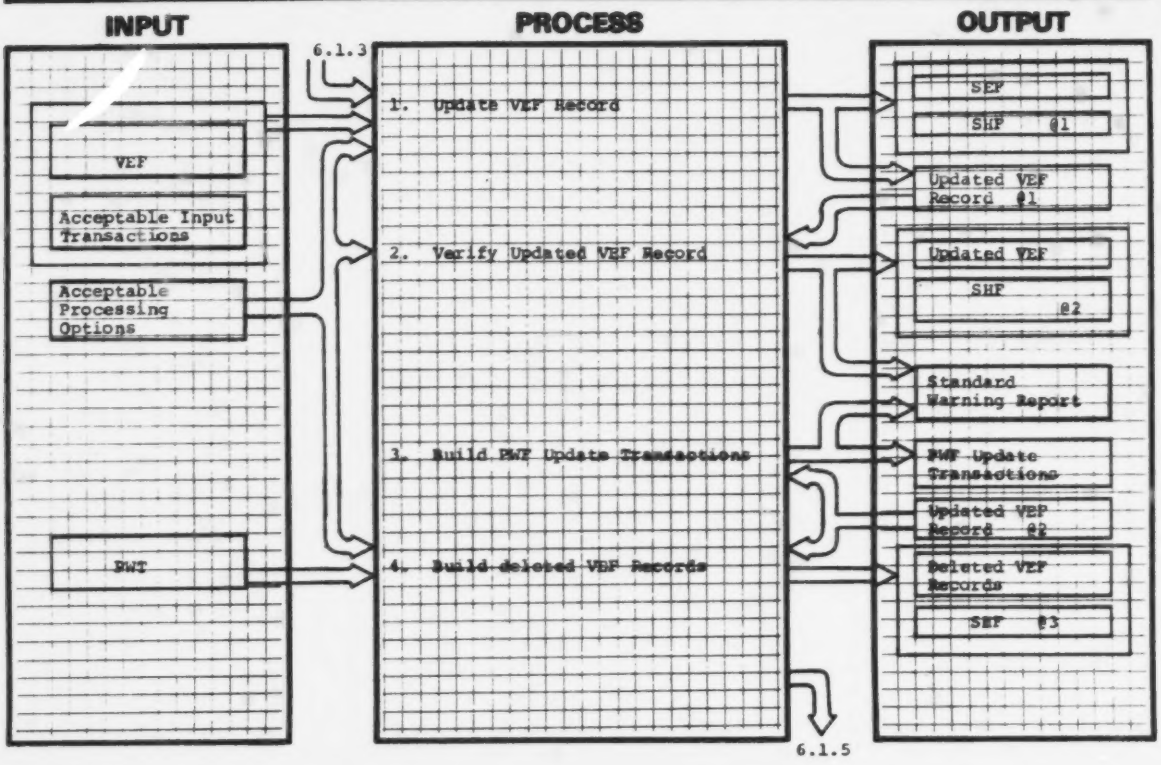
Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 **of** 1
Diagram No.: 6.1.3.7 **Description:** VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transactions having codes not equal to those previously mentioned are in error and are written to the Standard Error File (SEF). Assign an error code of 017.		VAEX010	MSIS. 207

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 1
Diagram No.: 6.1.4 **Description:** VEF Data Entry and Update

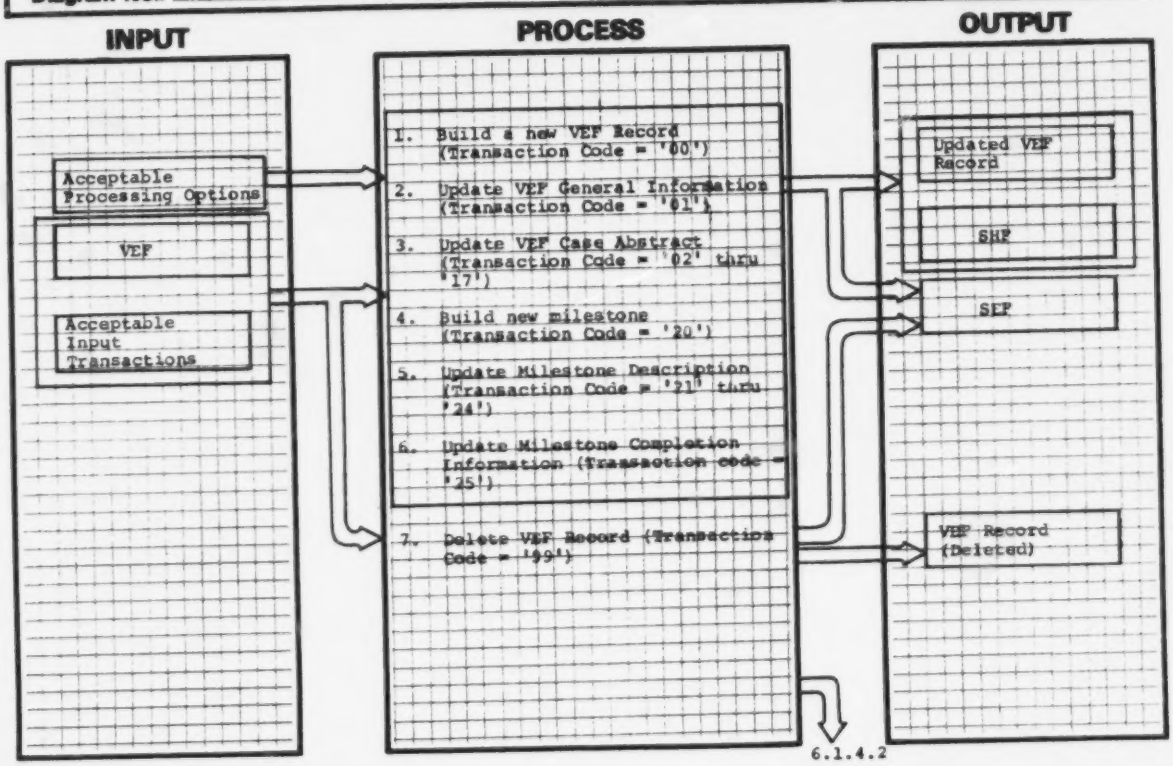


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Do the actual update of the Variances and Exemptions File (VEF) Records according to the acceptable input transactions.	6.1.4.1	VAEX010	
2	The updated VEF record is verified to see if: a. The expiration date is within the current compliance period. b. The expiration date is earlier than the current date. c. All elements to be reported to EPA are present (if it is a new VEF record). If the record was not updated or if it is not in danger of expiring, go on to record selection. (See HIPO 6.1.5)	6.1.4.2	VAEX010	
3	Build Public Water File (PWF) update transactions for the change(s) to the VEF record, is necessary.	6.1.4.3	VAEX010	
4	If the update was a deletion, build a deleted VEF record to be processed by module VAEX050 (Case History Report Production).	6.1.4.4	VAEX010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 1

Diagram No.: 6.1.4.1 **Description:** VEF Data Entry and Update

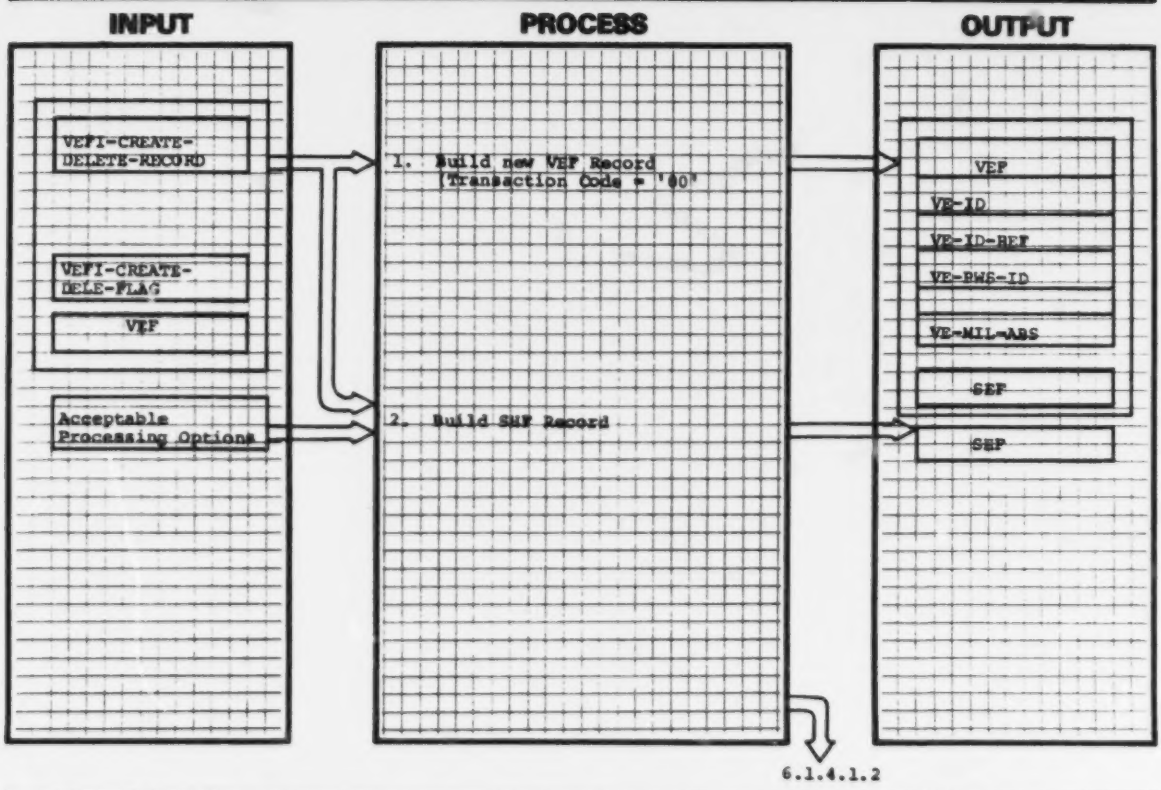

INPUT
PROCESS
OUTPUT
Acceptable Processing Options
VEF
Acceptable Input Transactions
1. Build a new VEF Record (Transaction Code = '00')
2. Update VEF General Information (Transaction Code = '01')
3. Update VEF Case Abstract (Transaction Code = '02' thru '17')
4. Build new milestone (Transaction Code = '20')
5. Update Milestone Description (Transaction Code = '21' thru '24')
6. Update Milestone Completion Information (Transaction code = '25')
7. Delete VEF Record (Transaction Code = '99')
Updated VEF Record
SHP
SEF
VEF Record (Deleted)
6.1.4.2

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a new Variances and Exemptions File (VEF) record for Transaction Code = '00'.	6.1.4.1.1	VAEX010	
2	Update VEF General Information for Transaction Code = '01'.	6.1.4.1.2	VAEX010	
3	Update the VEF Case Abstract for Transaction Codes = '02' thru '17'.	6.1.4.1.3	VAEX010	
4	Build a New Milestone for the specified Variance or Exemption for Transaction Code = '20'.	6.1.4.1.4	VAEX010	
5	Update the Milestone Description for the specified Variance or Exemption for Transaction Code = '21' thru '24'.	6.1.4.1.5	VAEX010	
6	Update the Milestone Completion/Delay Information for the specified Variance or Exemption for Transaction Code = '25'.	6.1.4.1.6	VAEX010	
7	Delete the VEF Record or Transaction Code = '99'.	6.1.4.1.7	VAEX010	
NOTE:	All transactions in error generate a record in the Standard Error File (SEF). The specific error codes to be used may be found in the Data Element Dictionary. If a data element is missing that is necessary for MSIS Processing, write a SEF record using error code 018.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 1

Diagram No.: 6.1.4.1.1 **Description:** VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '00' create a record for the Variances and Exemptions File (VEF). The storage areas are initialized in core and should be filled in by other transactions. All alphanumeric fields should be initialized to blanks. All numeric fields should be initialized to zeros. If the specified VE-ID is already on the VEF, the transaction is in error and is written to the Standard Error File (SEF). In addition, a program control flag is set to reject all other transactions with the same VE-ID's so the record on the VEF will not erroneously be updated.		VAEX010	200 212 MSIS. 207 DED
2	Build a Standard History File (SHF) Record. Use 'VE' for SHF-File-ID, VE-ID for SHF-RECORD-ID and SHF-NEW-VALUE, the Julian current date from the 'PROC' record for SHF-CUR-UPDATE-DATE and SHF-LAST-UPDATE-DATE and blanks for SHF-OLD-VALUE. The SHF-DATA-ELEMENT-CODE should be the code for the VE-ID.		VAEX010	MSIS. 202

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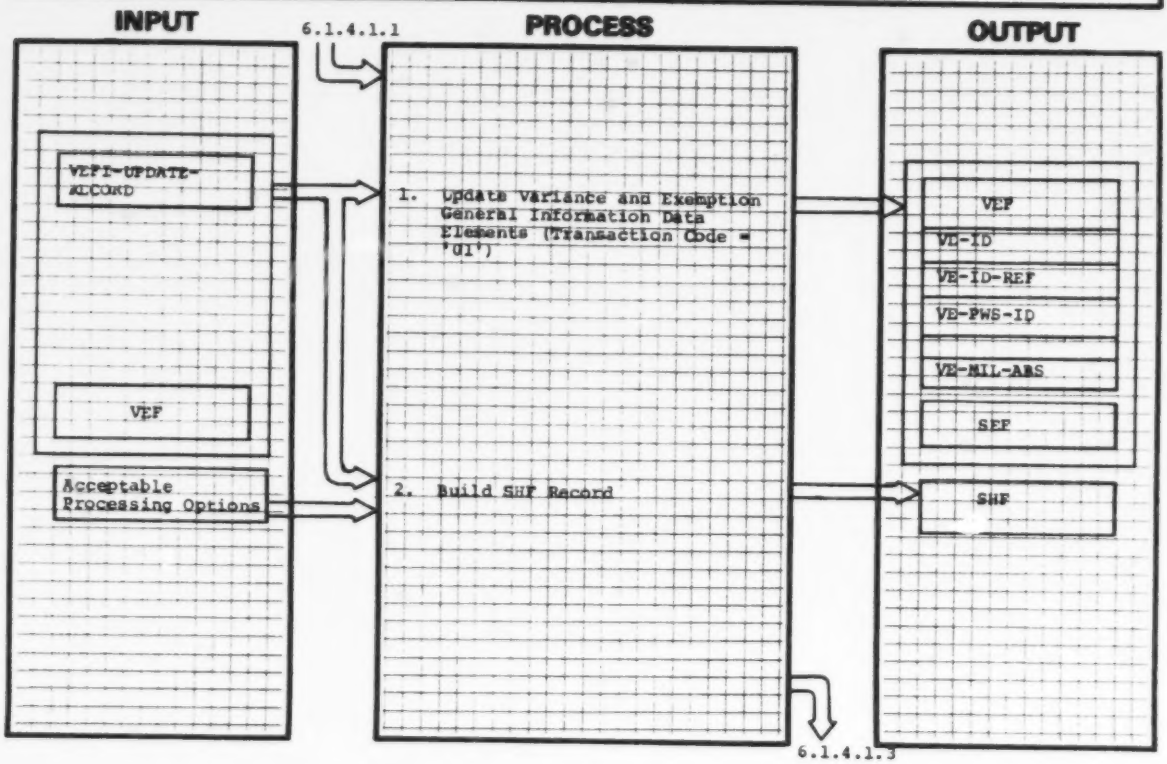
Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 **of** 1

Diagram No.: 6.1.4.1.2 **Description:** VEF Data Entry and Update

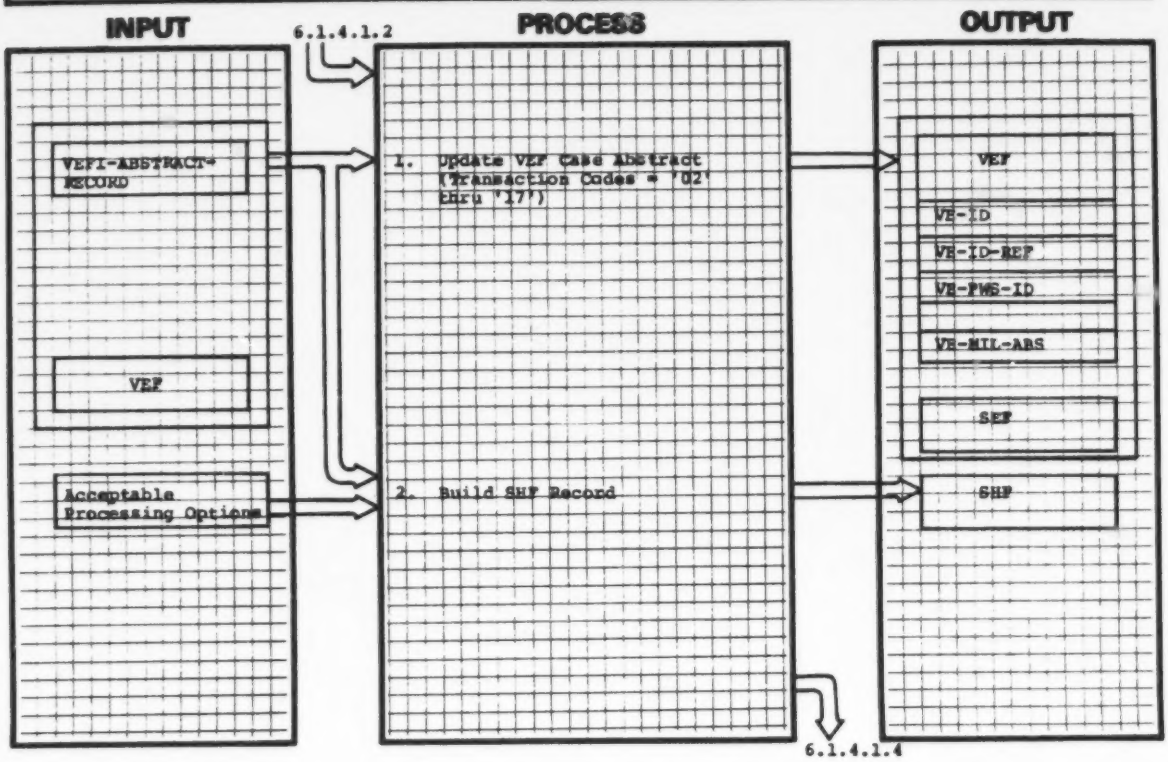


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code = '01' allows updating of the Variance and Exemption General Information which is contained in the non-variable part of the Variances and Exemptions File (VEF) record. Non-blank fields on the accepted input transactions are used to replace the corresponding data elements on the VEF record. A dollar sign ("$") in the leftmost position of an otnerwise blank input transaction field indicates the corresponding data element on the VEF record should be reinitialized (see HIPO 6.1.4.1.1 for values). If tne VEFI-ID specifieu on tne transaction is not present on tne VEF, tne entire transaction is in error and is written to tne Standard Error File (SEF).		VAEX010	201 212 MSIS. 207 DED
2	Build a Standard History File (SHF) record for eacn of tne updated data elements.		VAEX010	MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1

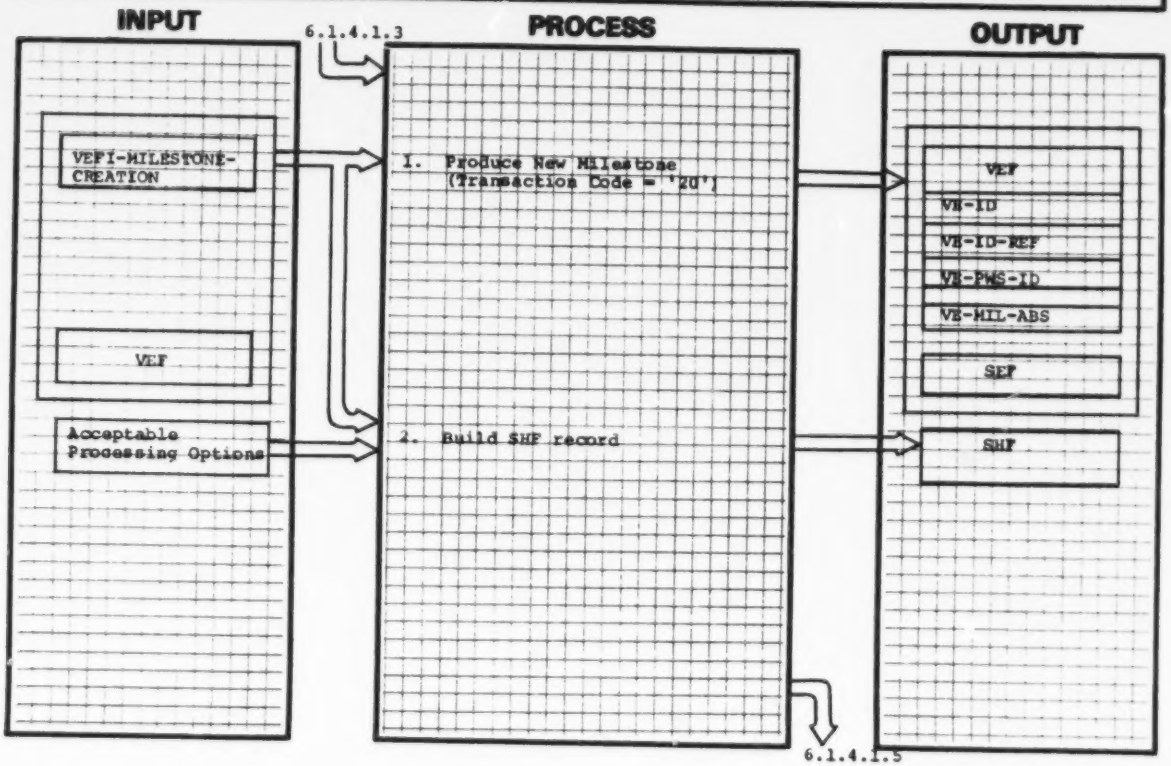
Diagram No.: 6.1.4.1.3 Description: VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Each of the transaction codes '02 thru '17' allows the insertion of one line of the Variances and Exemptions case abstract into a Variances & Exemptions File (VEF) record. If the VE-ID specified is not present on the VEF, the transaction is in error and is written to the Standard Error File (SEF).		VAEX010	202 212 MSIS. 207
2	Build a Standard History File (SHF) record for each of the updated data elements.		VAEX010	MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1
Diagram No.: 6.1.4.1.4 Description: VEF Data Entry and Update

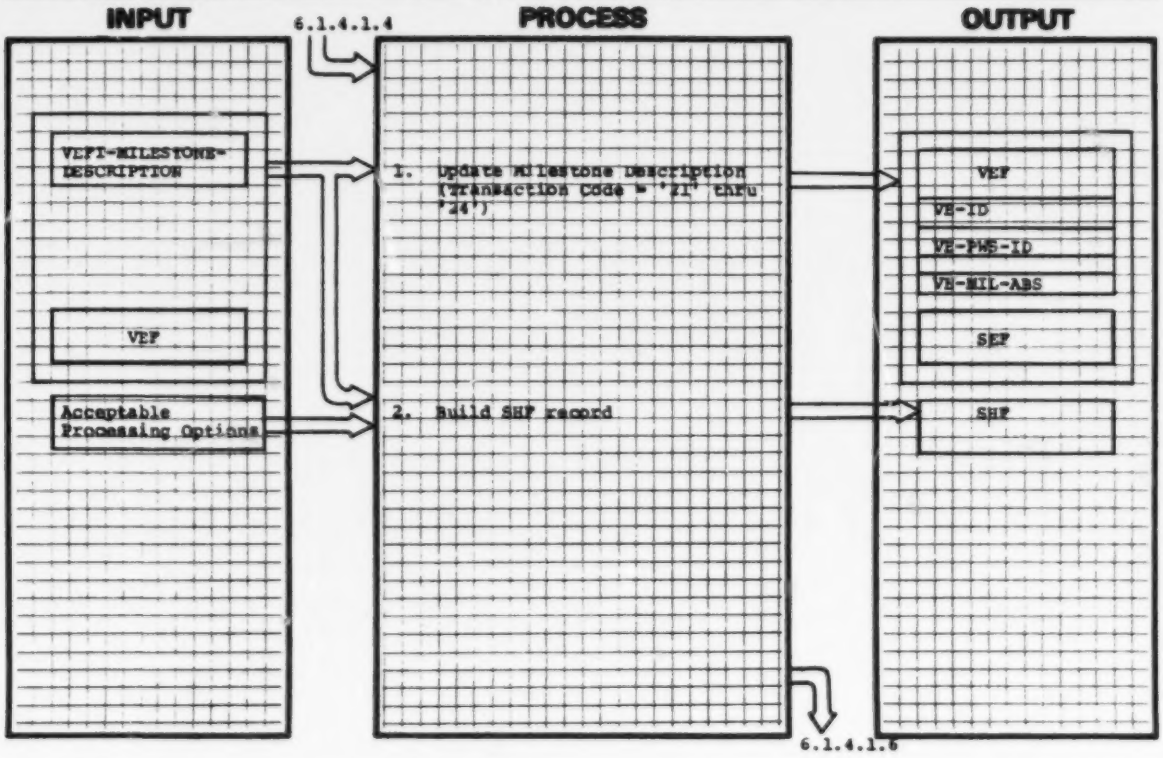


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction Code = '20' creates a Milestone. The input transactions are sorted by target date. Each particular milestone is uniquely identified by a target date and milestone code. As each milestone is inserted, previous ones are checked. Transactions containing duplicate milestones are in error and are written to the Standard Error File (SEF). NOTE: A milestone having a delay code = 'I' has been deleted and should not be considered in the duplicate milestone check. If the specified VE-ID is not present on the Variance and Exemption File (VEF), the transaction is in error and is written to the SEF. A maximum of twenty milestones are allowed for a particular Variance or Exemption. If the addition of a milestone would exceed this maximum, the transaction is in error and is written to the SEF.		VAEX010	203 212 MSIS. 207
2	Build a Standard History File (SHF) record for each of the updated elements.		VAEX010	MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1

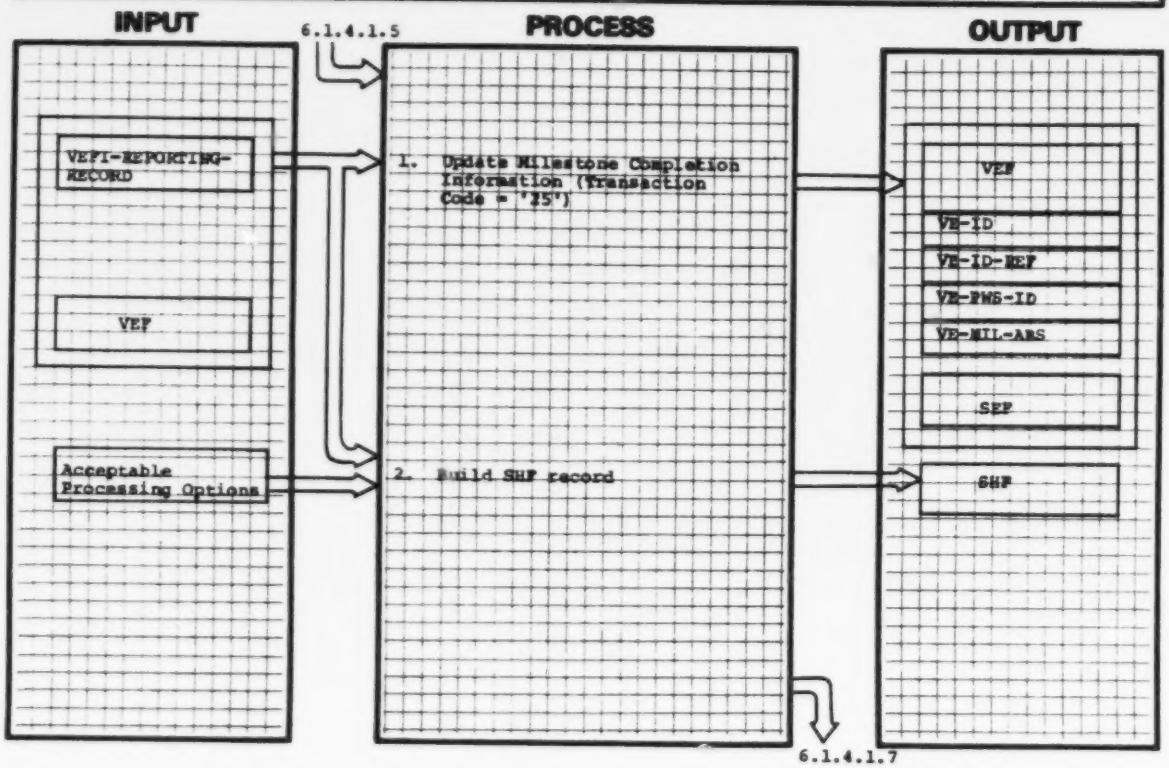
Diagram No.: 6.1.4.1.5 Description: VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction Codes = '21' thru '24' allow the updating of each of the four lines making up the milestone description. The target date and milestone code uniquely define a milestone. If the specified VE-ID is not present on the Variances and Exemptions File (VEF), the transaction is in error and is written to the Standard Error File (SEF). If the specified milestone is not present, the transaction is in error and is written to the SEF. NOTE: Milestones having a delay code = 'Z' have been deleted and should not be considered for updating.		VAEX010	204 212 MSIS. 207
2	Build a Standard History File (SHF) record for each of the updated elements.		VAEX010	MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1
Diagram No.: 6.1.4.1.6 Description: VEF Data Entry and Update

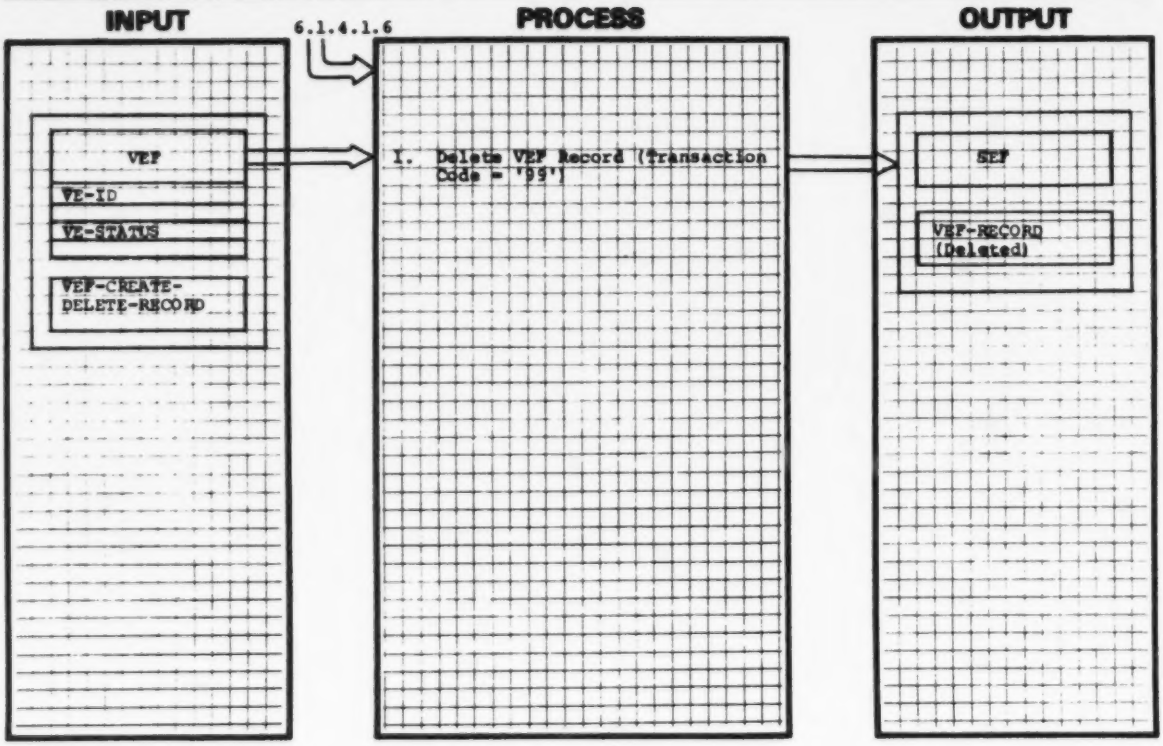


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction Code = '25' allows the updating of the actual date the milestone was attained or the milestone delay code. If the specified VE-ID is not present, the transaction is in error and is written to the Standard Error File (SEF). If the specified milestone is not present, the transaction is in error and is written to the SEF. If the VEFI-MILESTONE-ATTAINED-DATE is for a repeating milestone, a new VEF-TARGET-DATE is calculated by adding the appropriate number of months to the old VEF-TARGET-DATE. The VEFI-MILESTONE-ATTAINED-DATE is not stored in the record. NOTE: Milestones with a delay code = 'Z' have been deleted and should not be considered for updating.		VAEX010	205 212 MSIS. 207
2	Build a Standard History File (SHF) record for each of the updated elements. For a repeating milestone, the VEF-TARGET-DATE is updated, not the VEF-MILESTONE-ATTAINED-DATE. This is the only time a target date may be updated.		VAEX010	MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1

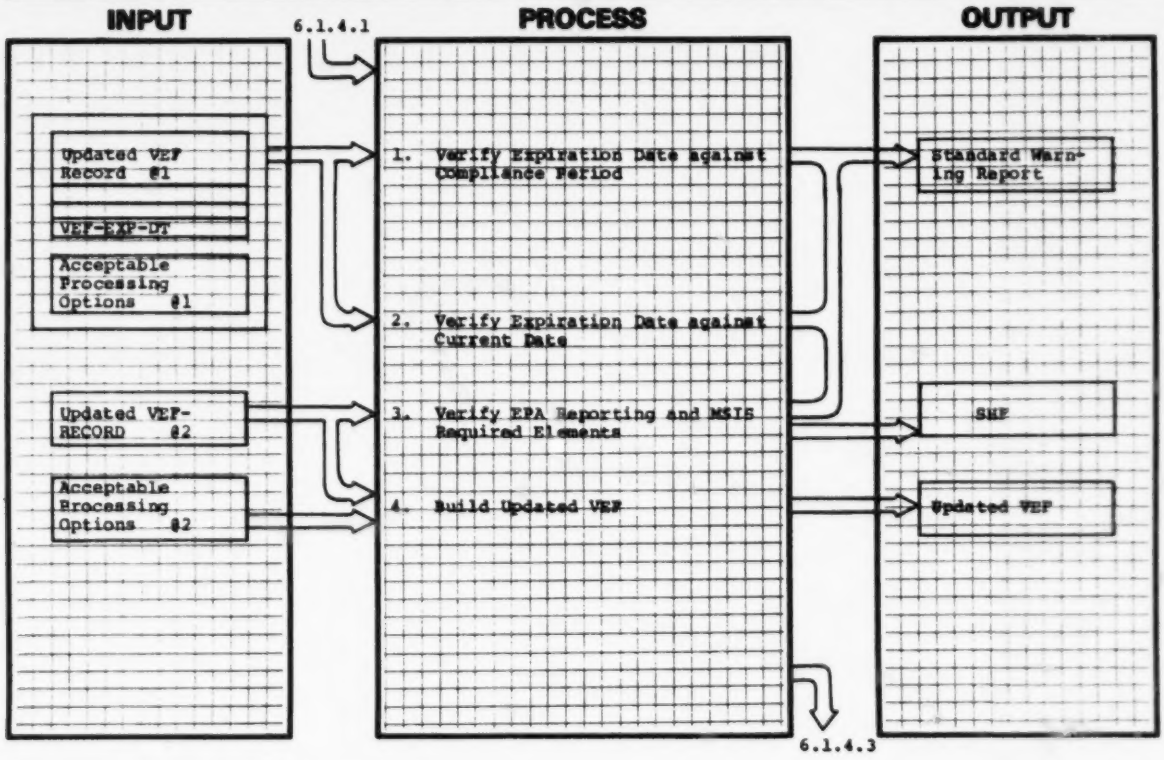
Diagram No.: 6.1.4.1.7 Description: VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Specifying Transaction Code = '99' is one way a Variances and Exemptions File (VEF) Record may be deleted (program generated deletion is covered in HIPO 6.1.4.2). The record may only be deleted if a previous transaction set VE-STATUS = 'Z' (awaiting deletion). If not, the transaction is in error and is written to the Standard Error File (SEF). If the specified VE-ID is not present on the VEF, the transaction is also in error and is written to the SEF. The action of the deletion is to set program control flags so that: a. The proper Public Water File (PWF) updates and Standard History File (SHF) records will be produced. b. Deleted VEF records will be written to the deleted VEF Records File. c. The current VEF record is not written to the updated VEF.		VAEX010	200 212 MSIS. 207

MODEL STATE INFORMATION SYSTEM

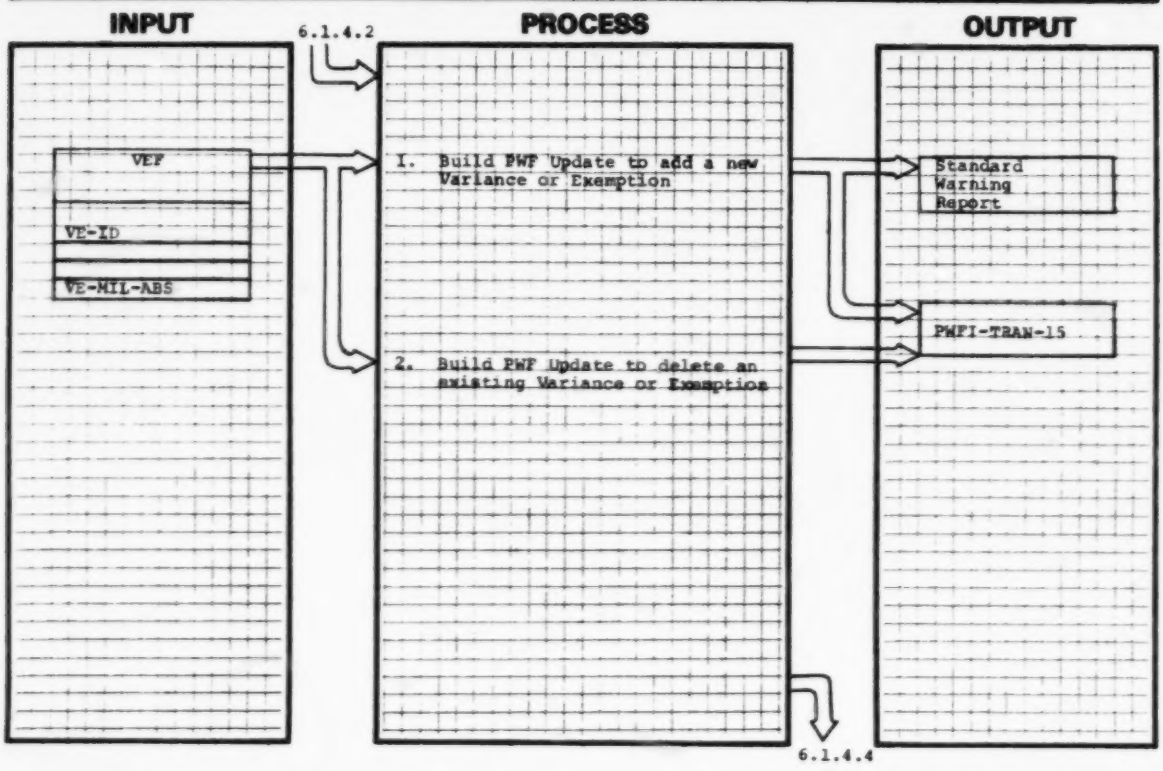
Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 1
Diagram No.: 6.1.4.2 **Description:** VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Expiration Date is checked against the Compliance period specified on the 'PROC' record. If the expiration date is within the compliance period, a warning message such as "V/E DUE TO EXPIRE IN SPECIFIED COMPLIANCE PERIOD" will be printed on the Standard Warning Report.		VAEX010	212 206 MSIS. 310
2	The Expiration date is checked against the current date specified on the 'PROC' record. If the expiration date is greater than or equal to the current date, a message such as "V/E HAS EXPIRED AND WILL BE DELETED" will be printed on the Warning report. In addition, all control flags used for record deletion are set so the record will be deleted and all of the proper updates will be written.		VAEX010	212 206 MSIS. 310
3	Verify that those elements necessary for EPA reporting and MSIS processing are present if the record was just created (using transaction code = '00'). For those elements not present, produce a message on the Standard Warning Report. If PWS-ID is not present, produce an additional message on the Standard Warning Report, produce a Standard History File (SHF) Record using 'LOW VALUES' as catalogue number and VE-ID as data element ID, and suppress record creation.		VAEX010	DED MSIS. 310
4	If all conditions for writing are met, the updated record may be written to the Updated Variances and Exemptions File (VEF). Before writing the record, if an update occurred, set last update date equal to the current date. Do not write the record if the deletion flag has been set.		VAEX010	212

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 of 1
Diagram No.: 6.1.4.3 **Description:** VEF Data Entry and Update

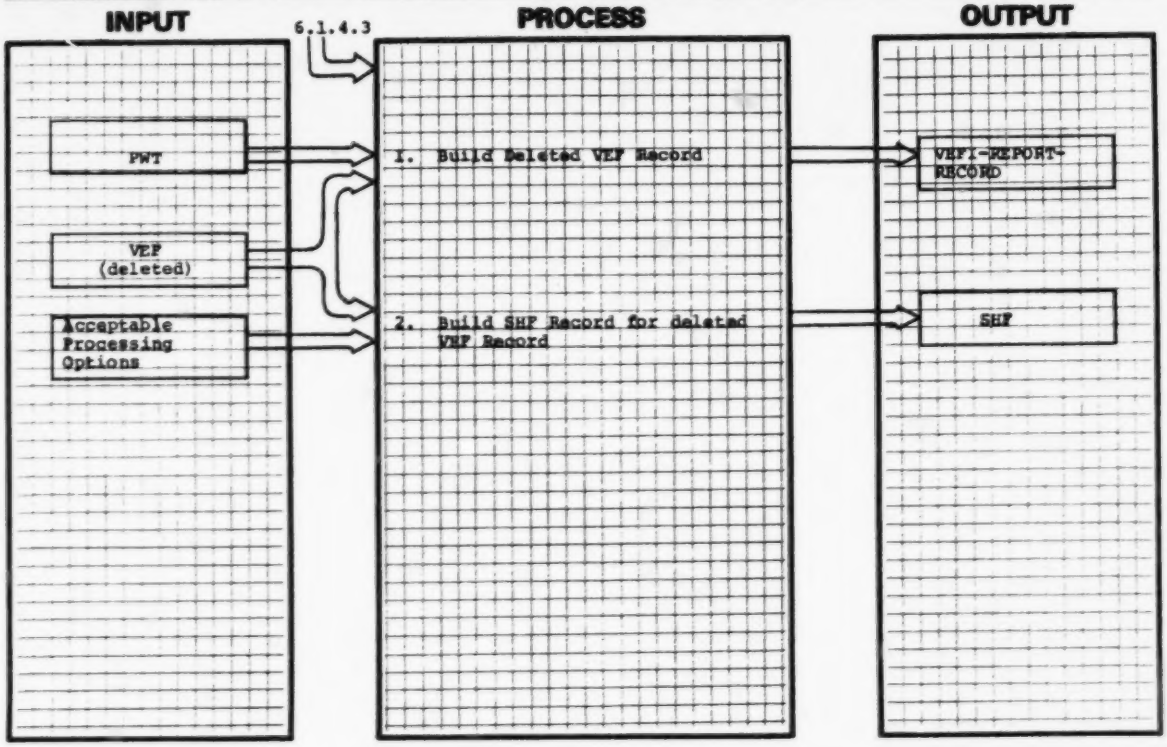


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If the VEF-STATUS-CODE was just updated to equal 'S', the Variance or Exemption was officially granted. An update transaction which will add a Variance or Exemption to the Public Water File (PWF) is generated along with a message on the Standard Warning Report.		VAEX010	PWSI. 228 212
2	If the Variance or Exemption was deleted (by transaction code = '99' or by the program), a transaction which will delete the Variance or Exemption from the PWF is generated. NOTE: As shown, the record layout for the PWF Updates is PWSI.228; however, occurrence number is replaced by an asterisk (*) for add transactions, or a 'D' for delete transactions with all other values being placed in their respective fields.		VAEX010	PWSI. 228 212

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1

Diagram No.: 6.1.4.4 Description: VEF Data Entry and Update

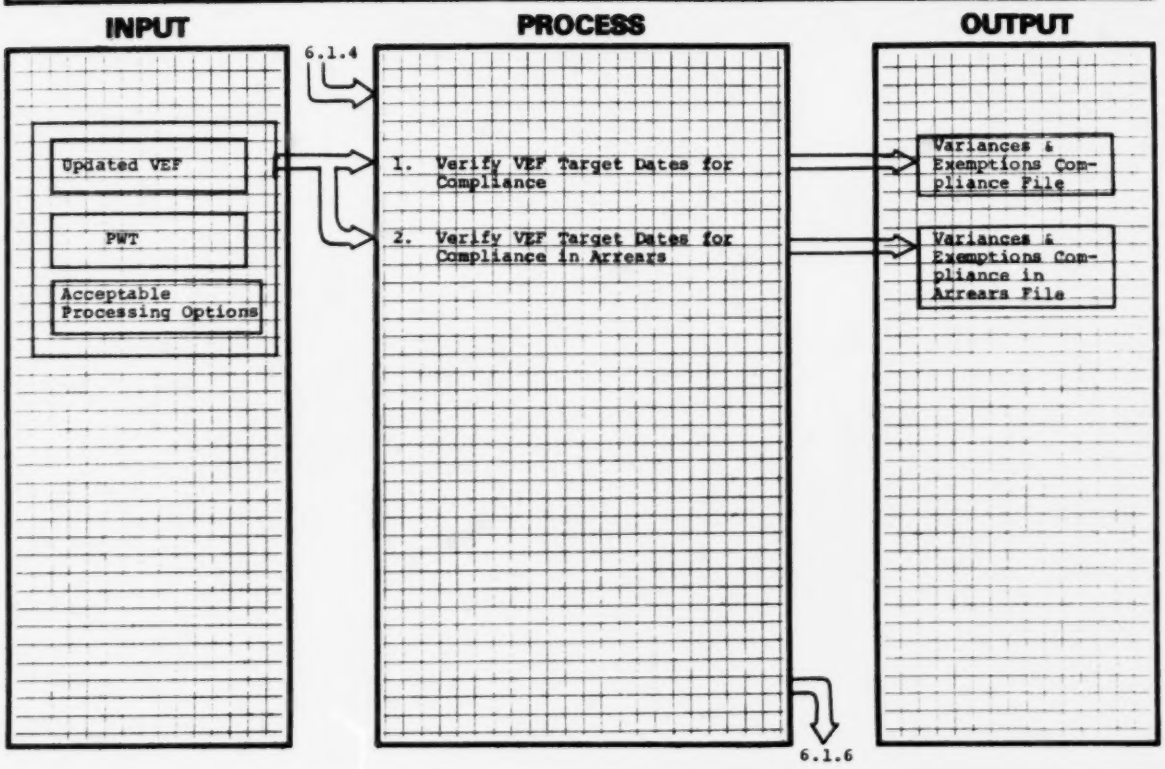


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If a record from the Variances & Exemptions File (VEF) has been deleted; it and information from the Public Water Table (PWT) are combined to form a deleted VEF record. This record is identical to one produced as output of the Variances & Exemptions select module (VAEX010) and is used as input to the Case History Generator (VAEX050). The sort key for this record is blank filled.		VAEX010	210 PWSI. 201 212 PWSI. 234
2	Build a single Standard History File (SHF) record for the deleted VEF record. Use data element code = '999', SHF-OLD-VALUE = 'RECORD DELETED' and SHF-NEW-VALUE equal blanks.		VAEX010	MSIS. 202 210

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 **of** 1

Diagram No.: 6.1.5 **Description:** VEF Data Entry and Update

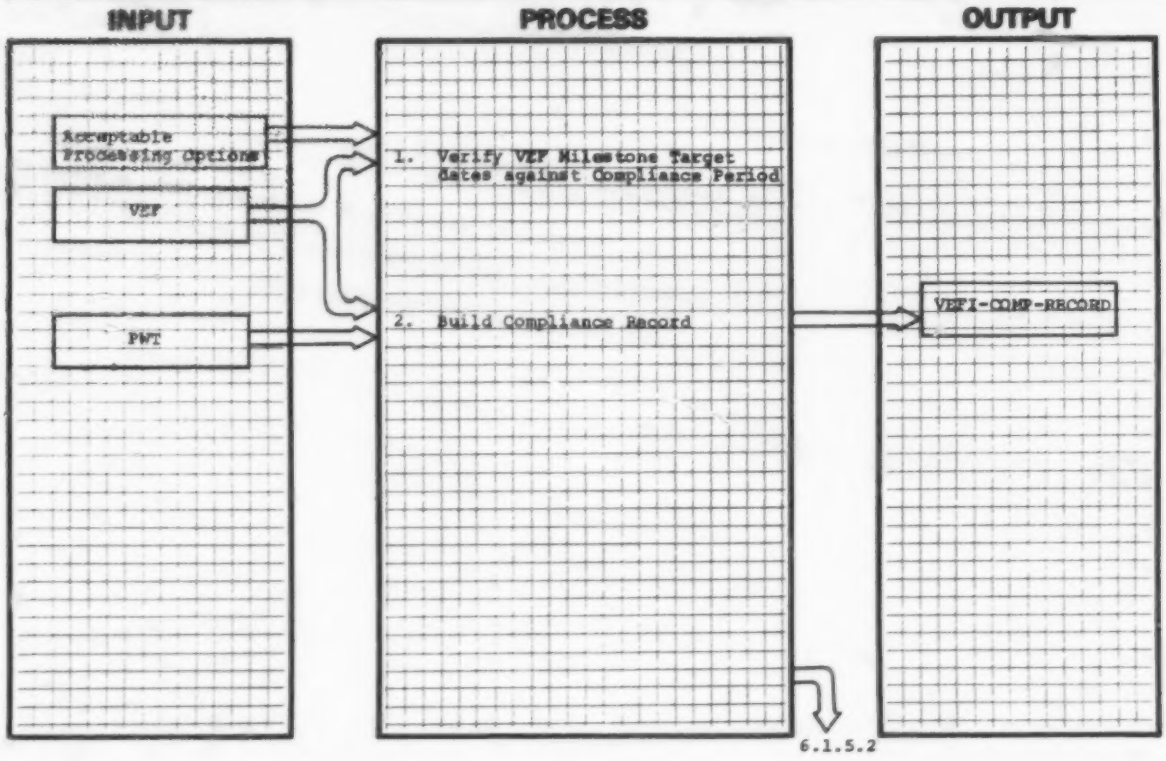


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The milestone target dates of the current Variances and Exemptions File (VEF) record are checked against the specified compliance period. Milestones having target dates within this compliance period are written to the VEF Compliance File. This step is not run if the Compliance Report is not to be produced.	6.1.5.1	VAEX010	
2	The milestone target dates of the current VEF record are checked against the specified compliance in arrears date. Milestones having target dates earlier than this compliance in arrears date are written to the VEF Compliance in Arrears File. This step is not run if the Compliance in Arrears report is not to be produced.	6.1.5.2	VAEX010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1

Diagram No.: 6.1.5.1 Description: VEF Data Entry and Update

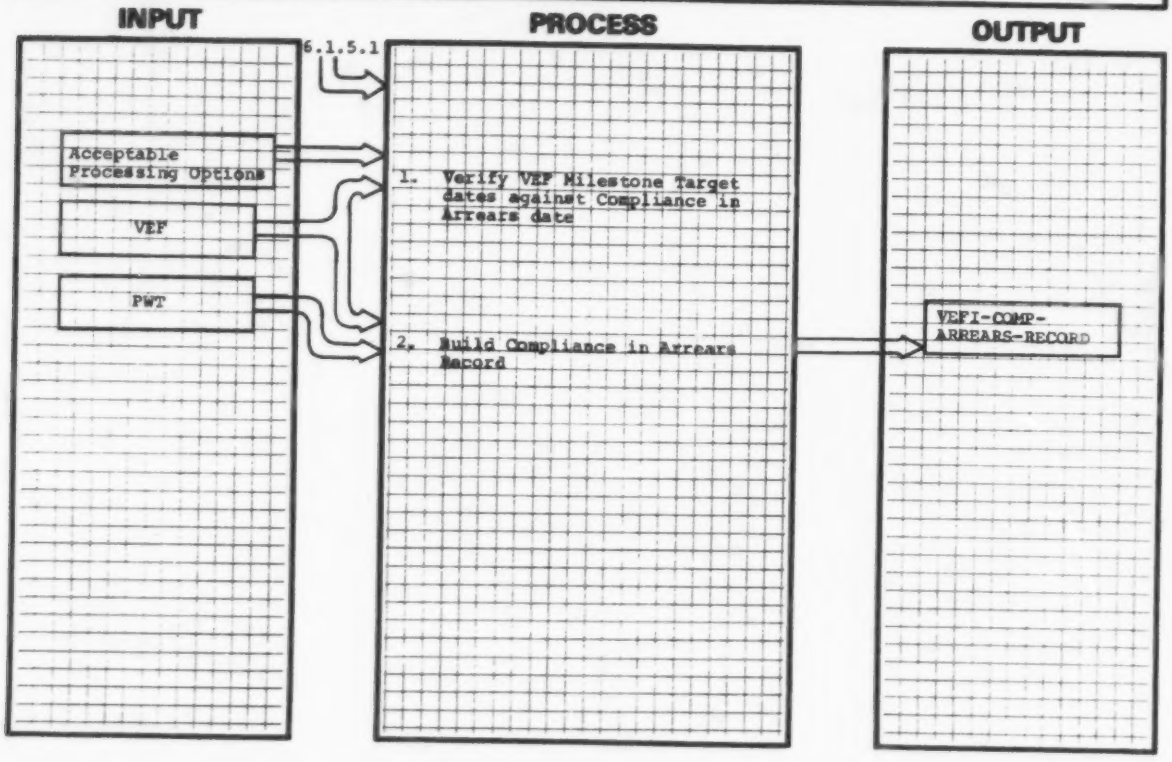


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify each of the active Variances and Exemptions File (VEF) milestone target dates against the Compliance Period. A target date is active if: a. It has not been attained b. It has not been deleted (VEF-DELAY-CODE = 'I')		VAEX010	212
2	If the milestone target date falls within the Compliance Period, the milestone is added to the variable section of the compliance record. After examining all milestones for a particular VEF record, if any were selected, the non-variable portion of the Compliance Record is built, utilizing the non-variable part of the VEF record and the Public Water Table (PWT) entry.		VAEX010	212 PWSI. 201 209 PWSI. 234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 1/11/77 Page: 1 of 1

Diagram No.: 6.1.5.2 Description: VEF Data Entry and Update

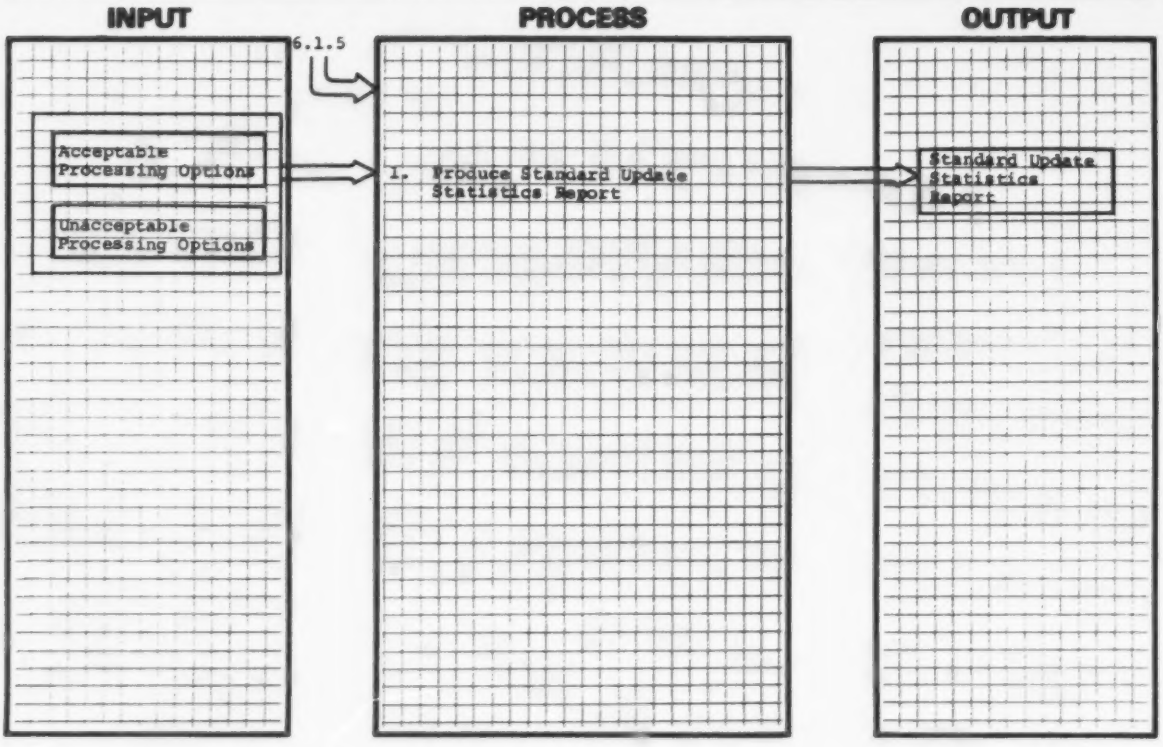


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify each of the active Variances & Exemptions File (VEF) milestone target dates against the Compliance in Arrears date (see HIPO 6.1.5.1 for definition of active).		VAEX010	212
2	If the milestone target date is earlier than the Compliance in Arrears date, the milestone is added to the variable portion of the Compliance in Arrears record. This record uses the same format as the Compliance Record and is built in a similar manner (see HIPO 6.1.5.1)		VAEX010	212 PWSI 201 217 PWSI. 234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 1/11/77 **Page:** 1 **of** 1

Diagram No.: 6.1.6 **Description:** VEF Data Entry and Update



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Update Statistics Report is always produced. The following two formats may be used: a. The Standard Update Statistics Report contains: 1. Totals which were accumulated during the update process: (a) number of records originally on the file (b) number of acceptable transactions (c) number of error records created (d) number of records modified on the file (e) number of new records added to the file (f) number of records deleted from the file (g) number of records currently on the file. 2. Totals (d) through (g) are computed as a percent of (a). b. If any Processing Options records are in error, the record and associated error messages can be produced instead of or in addition to the totals in 1.a.		VAEX010	MSIS. 300 MSIS. 309

NARRATIVE

SUBSYSTEM: Variances and Exemptions
PROGRAM NAME: VAEX020
DATE: November 17, 1976

I. OBJECTIVES

The objective of this program is to produce the Variances and Exemptions Compliance Schedule Report.

II. INPUTS

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Variances and Exemptions Compliance File	VEFI-COMP-DATE-RECORD	VAEX.211
		VEFI-COMP-RECORD	VAEX.209

B. Processing Options Records:

Not Applicable

III. OUTPUTS

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT FORM
1.	Variances and Exemptions Compliance Schedule Report	VAEX.302 VAEX.303

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Header lines for the Variances and Exemptions Compliance Schedule Report are produced. Dates for the header lines are obtained from the first record of the Variances and Exemptions Compliance File. Detail lines

of the Variances and Exemptions Compliance Schedule Report are produced using Variances and Exemptions Compliance records from the Variances and Exemptions Compliance File. Milestone repeating groups within each Variances and Exemptions record are ordered by target date in ascending sequence before printing them on the report. This report will appear in sequence by region, district, PWS-ID, and Variance and Exemption Identification code.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

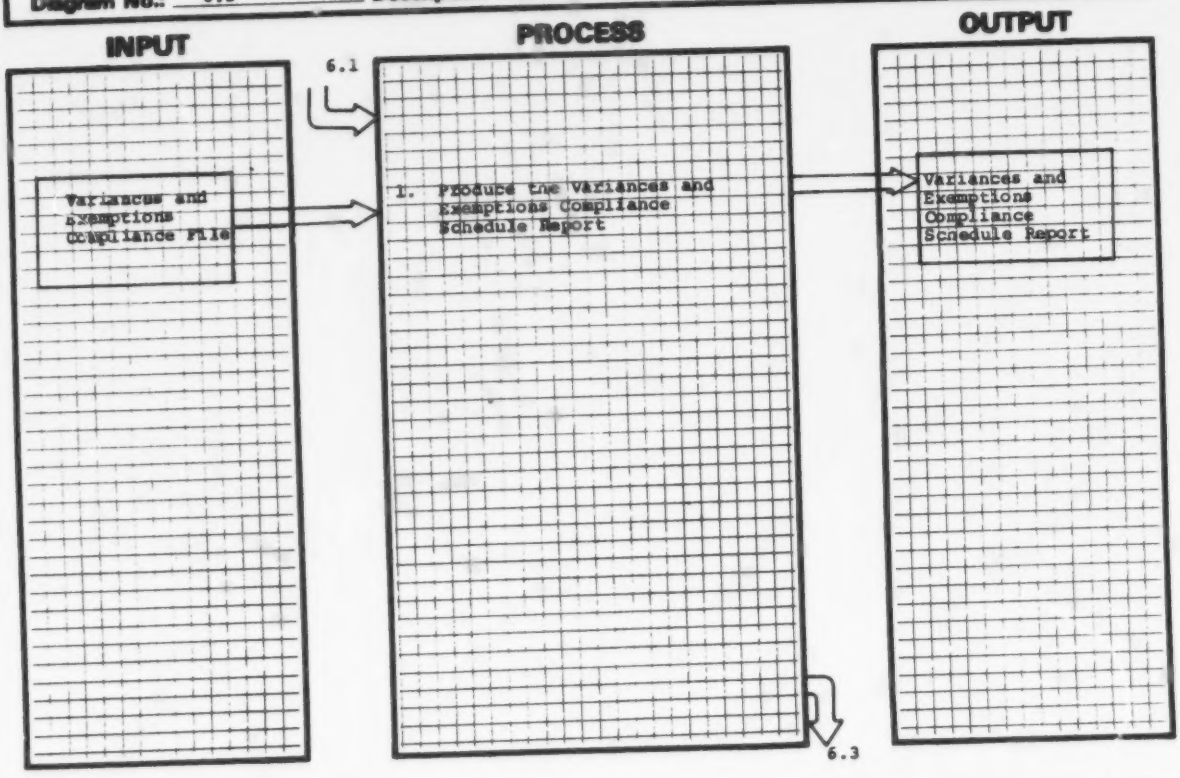
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Variances and Exemptions Date: 11-17-76 Page: 1 of 1

Diagram No.: 6.2 Description: Produce Compliance Report

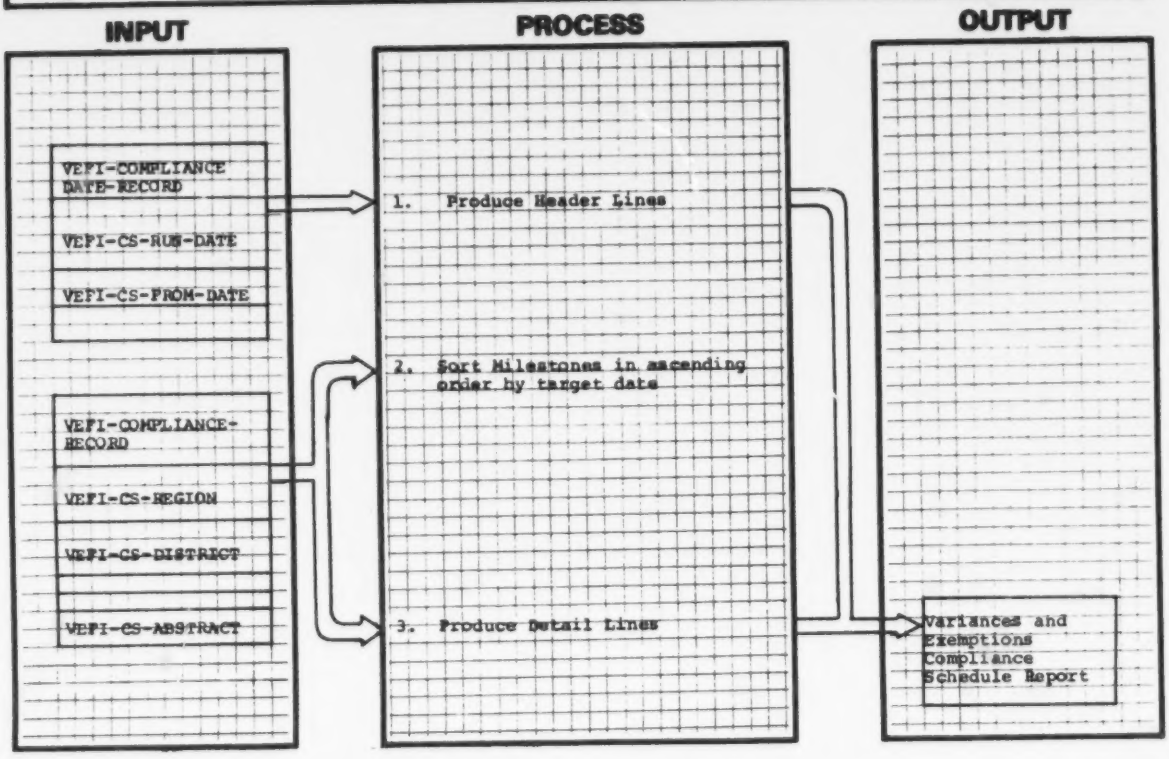


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Variances and Exemptions Compliance Schedule Report is produced for each of the Variances and Exemptions that nave Milestone target dates that fall within the specified compliance period. The Variances and Exemptions Compliance File contains information from the Variances and Exemptions (VAEX) File plus Public Water System Name, Address, Region, and District from the Public Water Table (PWT). The Variances and Exemptions Compliance File is created in VAEX010 and is externally sorted by Region, District, Public Water System-ID, and Variance and Exemption ID before processing. The first record of the Variances and Exemptions Compliance File indicates whether or not processing is to take place.	6.2.1	VAEX020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances and Exemptions Date: 11-17-76 Page: 1 of 1

Diagram No.: 6.2.1 Description: Produce Compliance Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If VEFI-CS-RUN-DATE is zero, then discontinue processing. Otherwise, move VEFI-CS-RUN-DATE, VEFI-CS-FROM-DATE, and VEFI-CS-TO-DATE to the date fields in the header lines.		VAEX020	211 302 303
2	Sort the milestone repeating groups in ascending order by target date so that the milestones will appear on the report in ascending order. Use a pointer sort.		VAEX020	209
3	Print only one Variance or Exemption per page. If there are more than three milestones for any one Variance or Exemption, then use page 2 format. Convert all dates from Julian format (YYDDD) to calendar format (MMDDYY).		VAEX020	209 302 303

NARRATIVE

SUBSYSTEM: Variances and Exemptions
PROGRAM NAME: VAEX030
DATE: October 14, 1976

I. OBJECTIVES:

The objective of this program is to produce the Variances and Exemptions Compliance in Arrears Report.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Variances and Exemptions Compliance in Arrears File	VEFI-COMP-ARREARS-DATE-RECORD	VAEX.208
		VEFI-COMP-ARREARS-RECORD	VAEX.217

B. Processing Options Records:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT FORM
1.	Variances and Exemptions Compliance in Arrears Report	VAEX.304 VAEX.305

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Header lines for the Variances and Exemptions Compliance in Arrears Report are produced. Dates for the header

lines are obtained from the first record of the Variances and Exemptions Compliance in Arrears File. Detail lines of the Variances and Exemptions Compliance in Arrears Report are produced using Variances and Exemptions Compliance in Arrears records from the Variances and Exemptions Compliance in Arrears File. Milestone repeating groups within each Variances and Exemptions Compliance in Arrears Record are ordered by target date in ascending sequence before printing them on the report. This report will appear in sequence by region, district, PWS-ID, and Variance and Exemption Identification code. Public Water Systems in Arrears are counted and individual totals for each region, district, and state are printed.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

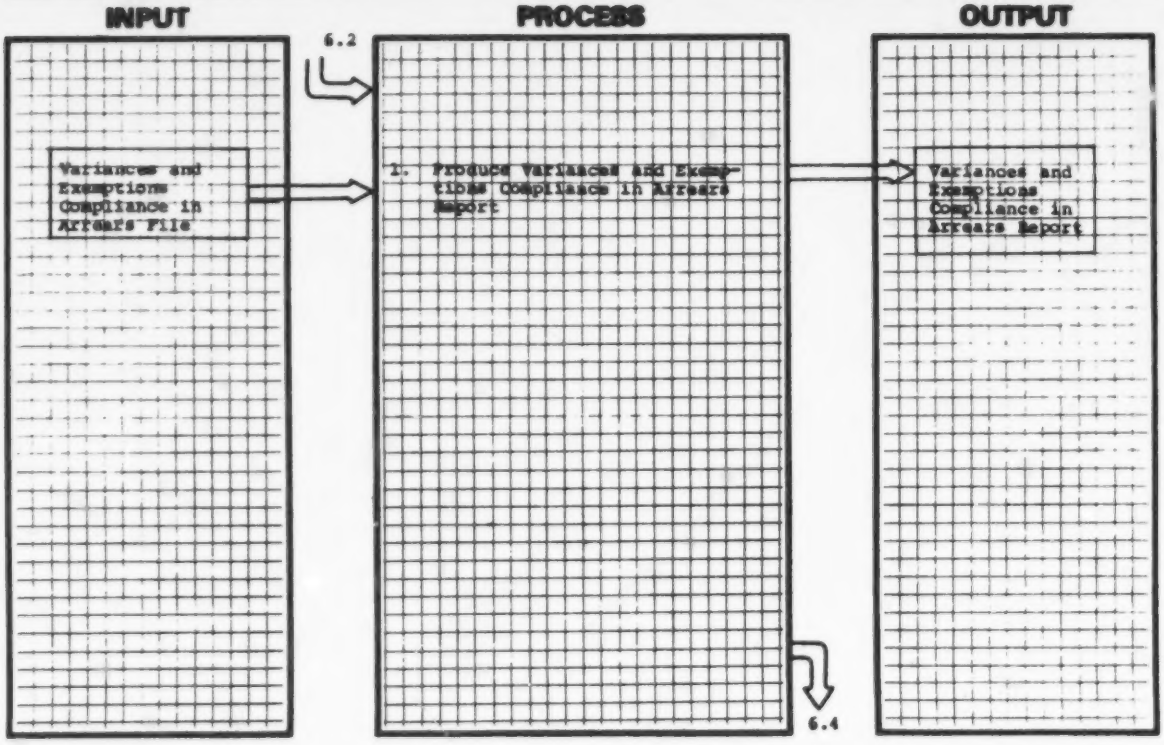
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Variances and Exemptions Date: 11-17-76 Page: 1 of 1

Diagram No.: 6.3 Description: Produce Compliance in Arrears Report

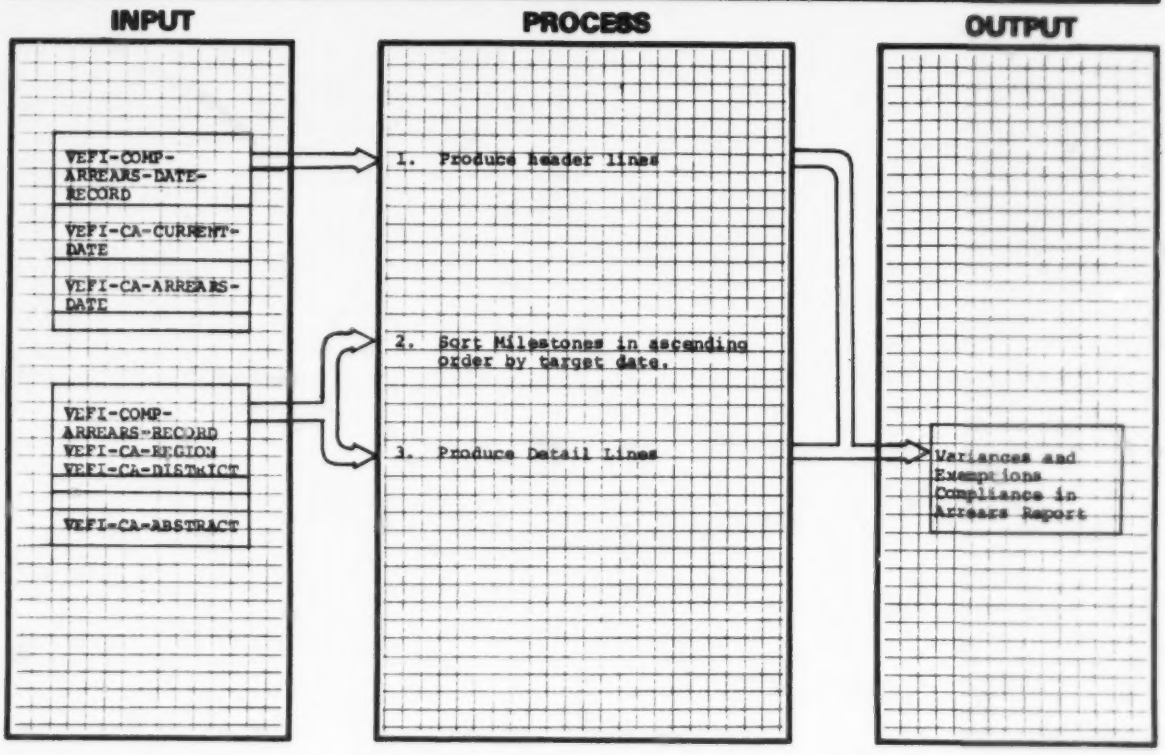


STEP	EXTENDED DESCRIPTION	REFERENCES		
		INFO	PROGRAM	OTHER
1	The Variances and Exemptions Compliance In Arrears Report is produced for each of the Variances and Exemptions Compliance in Arrears records that appear on the Variances and Exemptions Compliance in Arrears File. This file is created in VAEX010 and is externally sorted by Region, District, Public Water System-ID, and Variance and Exemption Identification code before processing. The first record of the Variances and Exemptions Compliance in Arrears File indicates whether or not processing is to take place.	6.3.1	VAEX030	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 11-17-76 **Page:** 1 of 1

Diagram No.: 6.3.1 **Description:** Produce Compliance in Arrears Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If VEFI-CA-CURRENT-DATE is zero, then discontinue processing. Otherwise, move VEFI-CA-CURRENT-DATE to the date field in the header line. Store VEFI-CA-ARREARS-DATE for later computations.		VAEX030	208 304 305
2	Sort the Milestone repeating groups in ascending order by target date so that the milestones appear on the report in ascending order. Use a pointer sort.		VAEX030	217
3	Count the number of Public Water Systems in arrears for each District, for each Region and for the State. Print the Region, District and State totals as they are accumulated. If there are more than three Milestones for any one Variance or Exemption, then use page 2 format. Compute the lag in months by subtracting the milestone target date from the Arrears date. Convert all dates from Julian format (YYDDD) to calendar format (MMDDYY).		VAEX030	217 304 305

NARRATIVE

SUBSYSTEM: Variances and Exemptions
PROGRAM NAME: VAEX040
DATE: January 28, 1977

I. OBJECTIVES:

The objective of this program is to search the Variances and Exemptions File (VEF) and select specific Variances and Exemptions records for the Variances and Exemptions Condensed Report and the Variances and Exemptions Case History Report based upon given selection criteria.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Variances and Exemptions File	VEF-RECORD	VAEX.212
2.	Public Water Table	PWT-RECORD PWT-HEADER-RECORD	PWSI.201 PWSI.234
3.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	VEFI-VE40-PROC-RECORD	VAEX.104	VAEX.214
2.	Sort Options	VEFI-SORT-RECORD	VAEX.103	VAEX.207
3.	Selection Form (SEL1)	VEFI-SELECT-1-RECORD	VAEX.105	VAEX.215
4.	Selection Form (SEL2)	VEFI-SELECT-2-RECORD	VAEX.106	VAEX.216

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Variances and Exemptions Report File	VEFI-REPORT-DATE-RECORD	VAEX.213
		VEFI-REPORT-RECORD	VAEX.210

B. Report Layouts:

1.	Standard Selection Statistics Report	MSIS.312 MSIS.309

C. Turnaround Documents:

Not applicable

IV. FUNCTIONS:

1. Records from the Data Element Table (DET) with the file ID of "VE" are read and used to build an internal DET.

2. The Processing Options records are read and edited. If any errors are detected, then processing is discontinued.

3. Based on mnemonic names and values from the Processing Options "SEL1" records and relational operators from "SEL2" records, Variances and Exemptions File (VEF) records are selected for report production.

4. For each record that has been selected, a sort key is constructed using information from the "SORT" Processing Options record, and a selected VEF report record is built.

5. The Standard Selection Statistics Report is produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

2. Sort Options

3. Selection Form--Definition of Data Elements

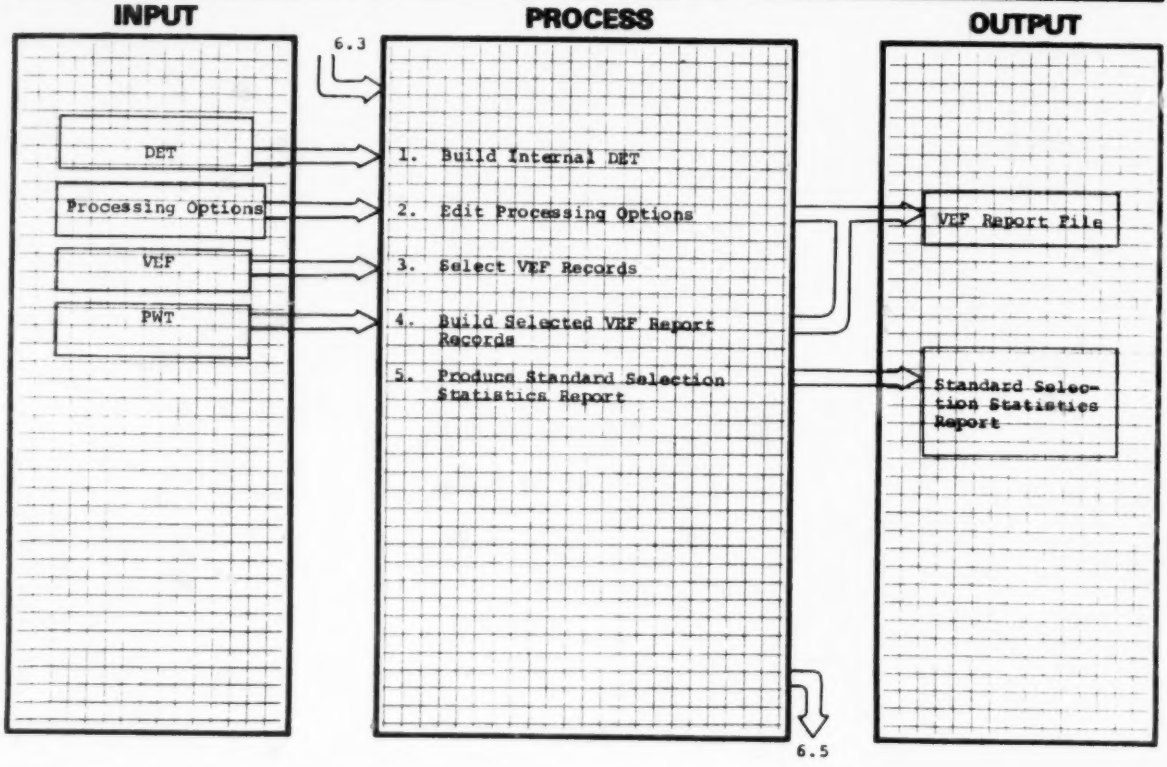
4. Selection Form--Definition of Logic for Selection

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

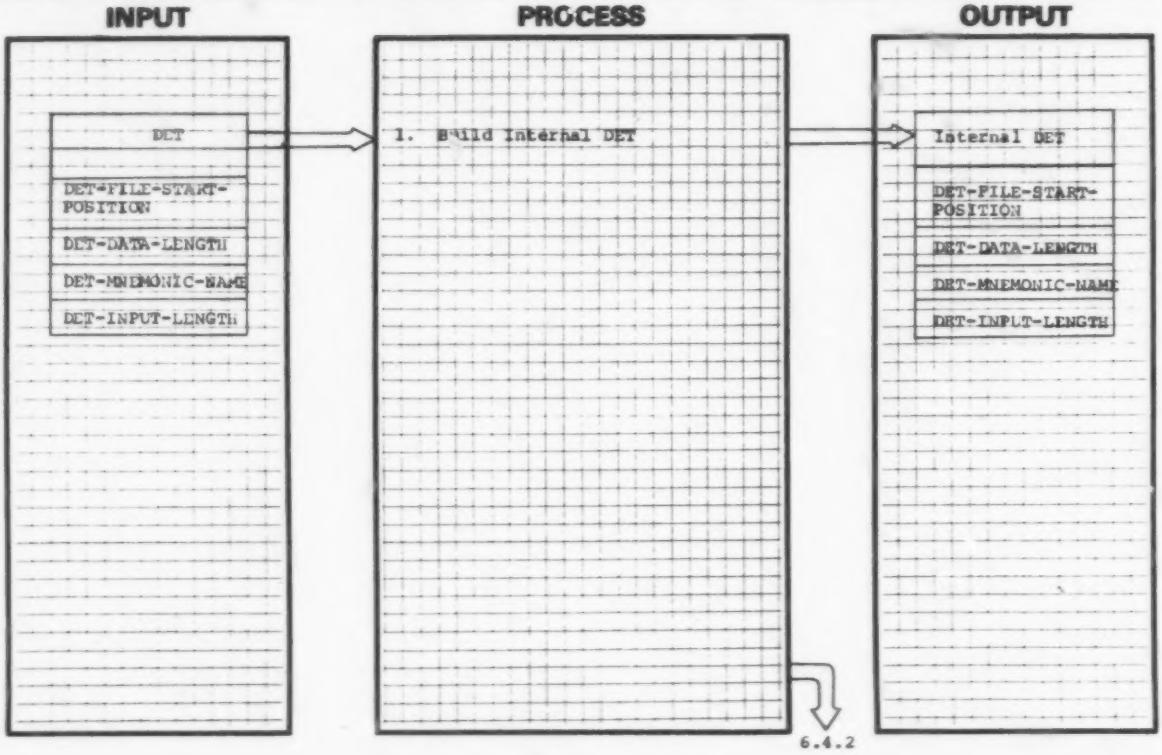
Diagram Type: Overview **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 of 1
Diagram No.: 6.4 **Description:** Select from VEF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built.	6.4.1	VAEX040	
2	The processing options including 'PROC', 'SEL1', 'SEL2', and 'SORT' records are edited.	6.4.2	VAEX040	
3	Records are selected from the Variances and Exemptions File (VEF) according to the options contained on the 'SEL1' and 'SEL2' records.	6.4.3	VAEX040	
4	If a VEF record was selected, a sort key is built, information from the Public Water Table (PWT) is added, and all information is then written to a work file for processing by VAEX041 and VAEX050.	6.4.4	VAEX040	
5	The Standard Selection Statistics Report is produced after all VEF records have been checked. This report shows all the selection criteria, the number of records selected and any Processing Options in error.	6.4.5	VAEX040	

MODEL STATE INFORMATION SYSTEM

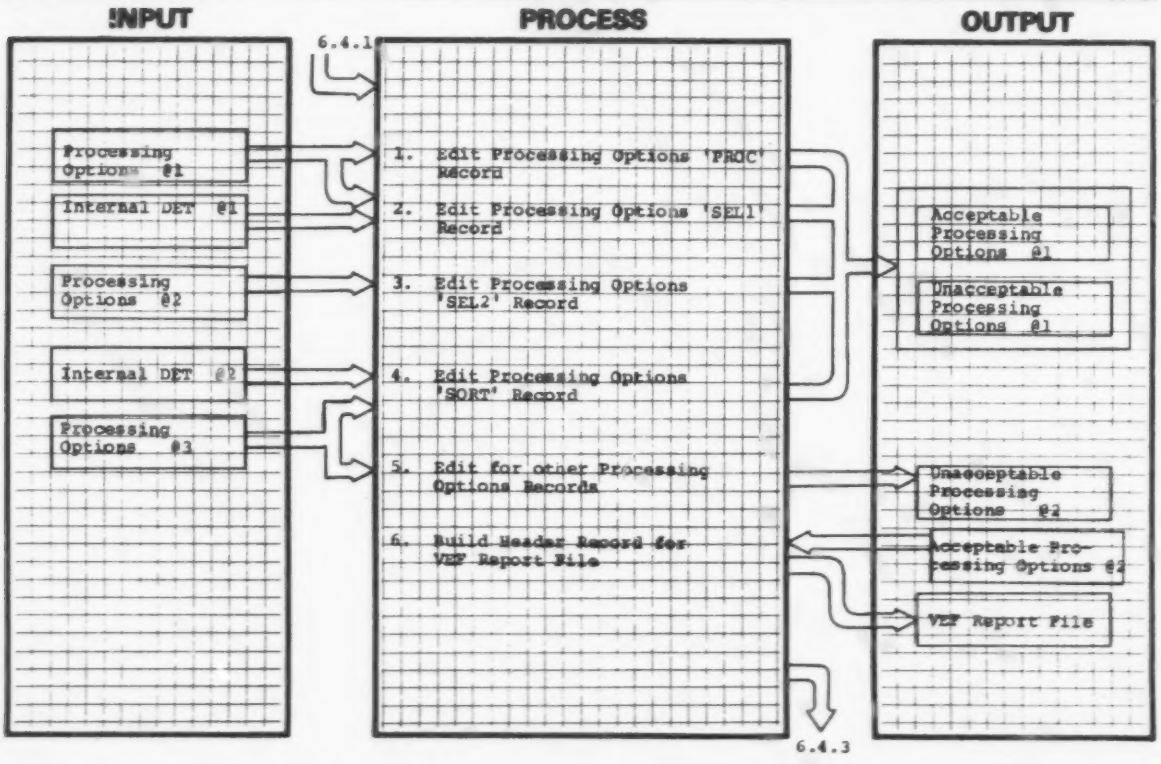
Diagram Type: Detail **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 of 1
Diagram No.: 6.4.1 **Description:** Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET. Only the file start position, data element length, data element mnemonic, and input length are used.		VAEX040	MSIS. 201

MODEL STATE INFORMATION SYSTEM

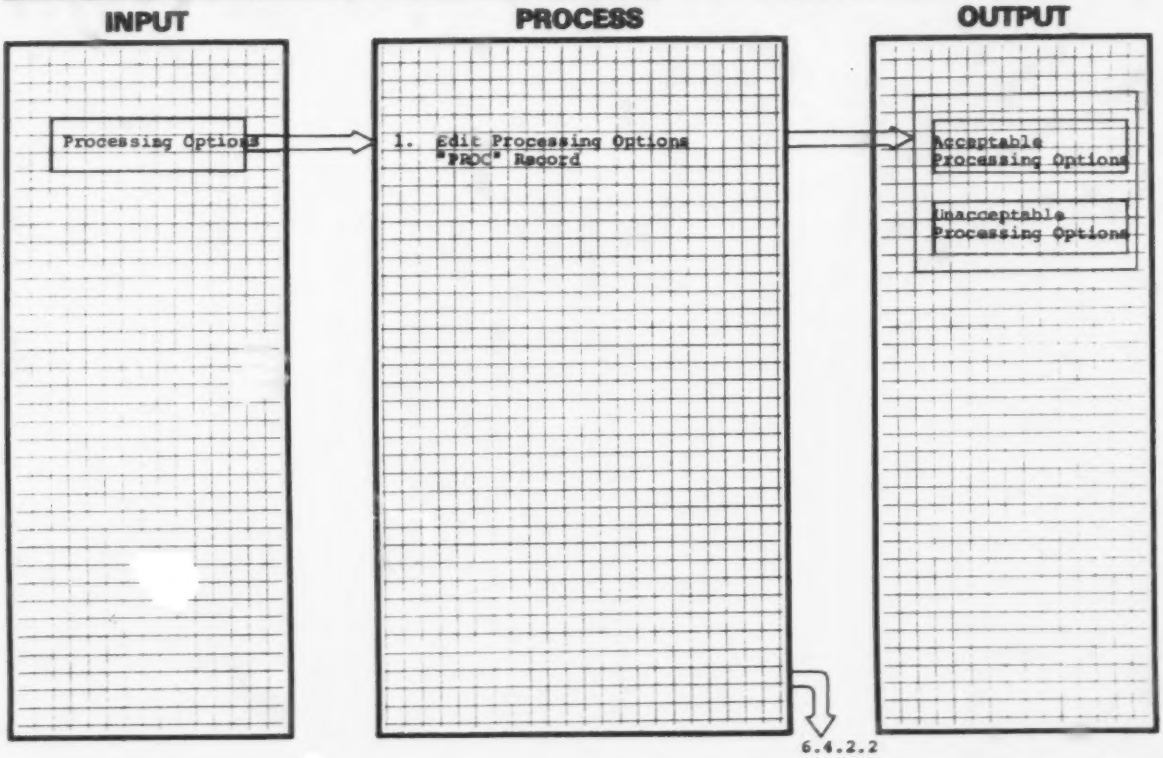
Diagram Type: Overview **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 **of** 1
Diagram No.: 6.4.2 **Description:** Edit Processing Options



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'PROC' in positions 1-4.	6.4.2.1	VAEX040	
2	Edit the Processing Options record with 'SEL1' in positions 1-4.	6.4.2.2	VAEX040	
3	Edit the Processing Options record with 'SEL2' in positions 1-4.	6.4.2.3	VAEX040	
4	Edit the Processing Options record with 'SORT' in positions 1-4.	6.4.2.4	VAEX040	
5	Edit records with other than above four keywords in positions 1-4.	6.4.2.5	VAEX040	
6	Build the header record for the Variances and Exemptions Report file.	6.4.2.6	VAEX040	
	NOTE: Any Processing Options in error will cause an error message to be printed on the Standard Selection Statistics Report (see HIPO 6.4.5).			

MODEL STATE INFORMATION SYSTEM

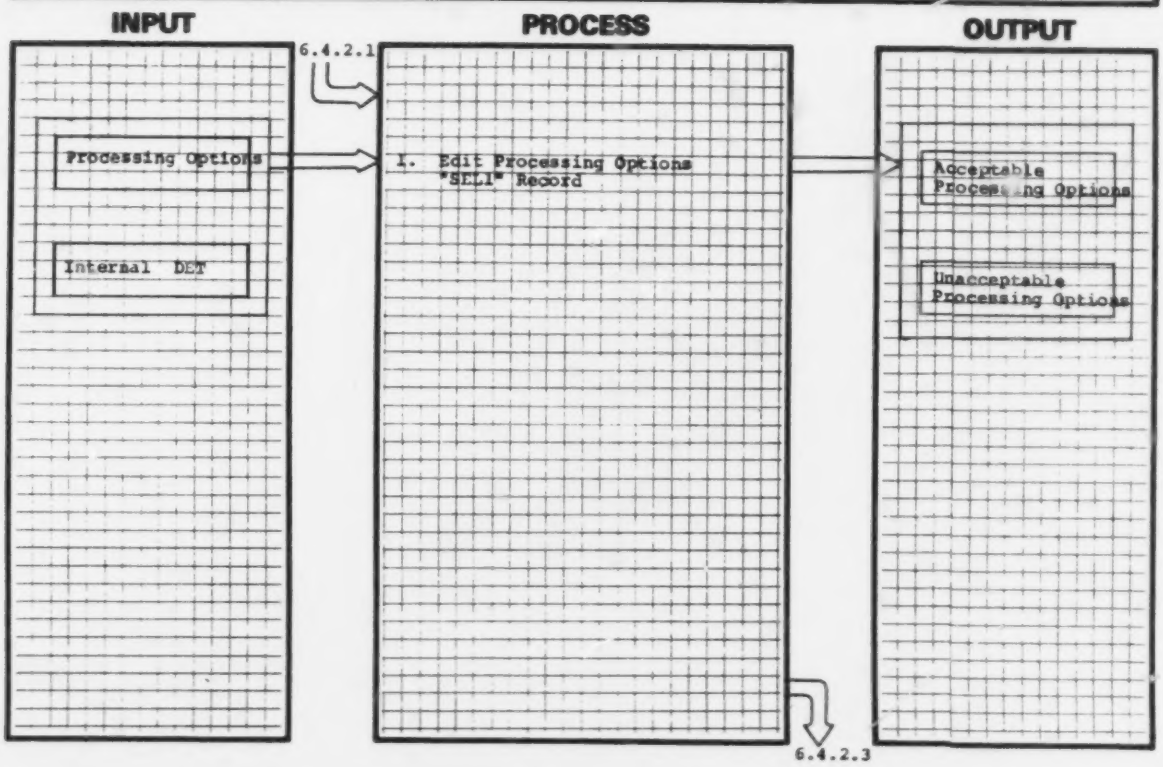
Diagram Type: Detail **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 of 1
Diagram No.: 6.4.2.1 **Description:** Edit Processing Options "PROC" Record



STEP	DETAILED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Record with "PROC" in positions 1-4 of the record as follows: a. The cur. . date must be a valid date - if it is not, default to a blank string. b. The Condensed Report production option must be a "Y" or "N". If it is not, default to a "Y". c. The Case History Report production option must be a "Y" or "N". If it is not, default to a "Y". If no "PROC' record exists, or if more than one "PROC" record exists, processing should be terminated. NOTE: If any defaults are taken, warning messages will be written on the Standard Selection Statistics Report (see HIPO 6.4.5).		VAEX040	214

MODEL STATE INFORMATION SYSTEM

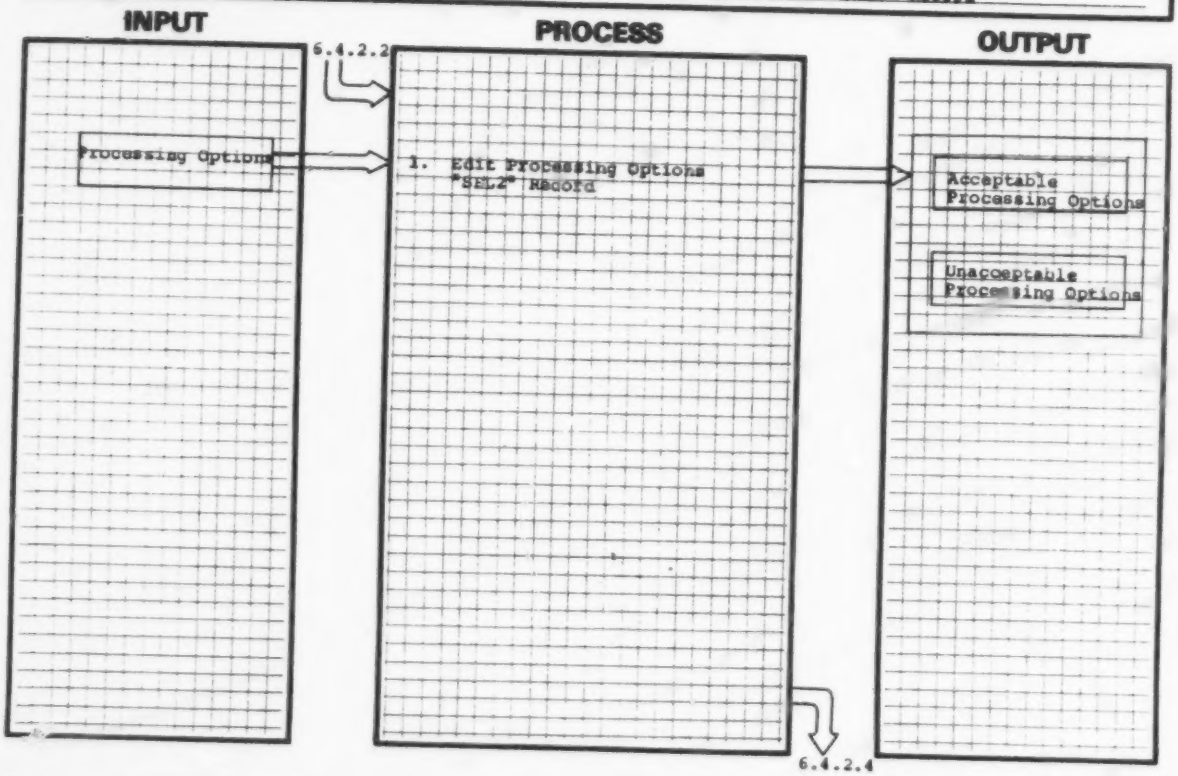
Diagram Type: Detail **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 of 1
Diagram No.: 6.4.2.2 **Description:** Edit Processing Options "SEL1" Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the processing options records with "SEL1" in positions 1-4 of the records as follows: a. VEFI-SELECT-1-MNEMONIC, positions 5-14, must equal one of the mnemonic names on the record layout for the Variances and Exemptions File (VEP). This edit is hard coded into the program. b. VEFI-SELECT-1-DE-VALUE, positions 15-29, must have blanks in positions (DET-INPUT-LENGTH plus 15) to 29 where DET-INPUT-LENGTH is the length of a data element associated with the mnemonic name matched in 1.a. above. Positions 15 to (DET-INPUT-LENGTH plus 14) must be either numeric or alphanumeric as specified by the Data Element Dictionary (DED) for that particular data element. Additionally, if the data element is a date, it is checked for validity and then converted to Julian for comparison purposes. If the VEFI-SELECT-1-DE-VALUE is numeric, contains a decimal point, and the associated VEFI-SELECT-1-MNEMONIC references a decimal number (refer to the DED for these elements), then move the VEFI-SELECT-1-DE-VALUE to a 15 position alphanumeric field for comparison purposes, placing the decimal in position 6 and replacing all blanks with zeros. c. VEFI-SELECT-1-DE-NO, positions 30-31, must be a number from 01 to 35 and must be a different number from all other "SEL1" records. If there are no "SEL1" records or if an error exists on any "SEL1" record, then the record is in error and will be written on the Standard Selection Statistics Report. Appropriate error messages for the "SEL1" Processing Options records may be found by referencing the Error Code Instructions. If any errors exist, processing will be terminated.		VAEX040	215

MODEL STATE INFORMATION SYSTEM

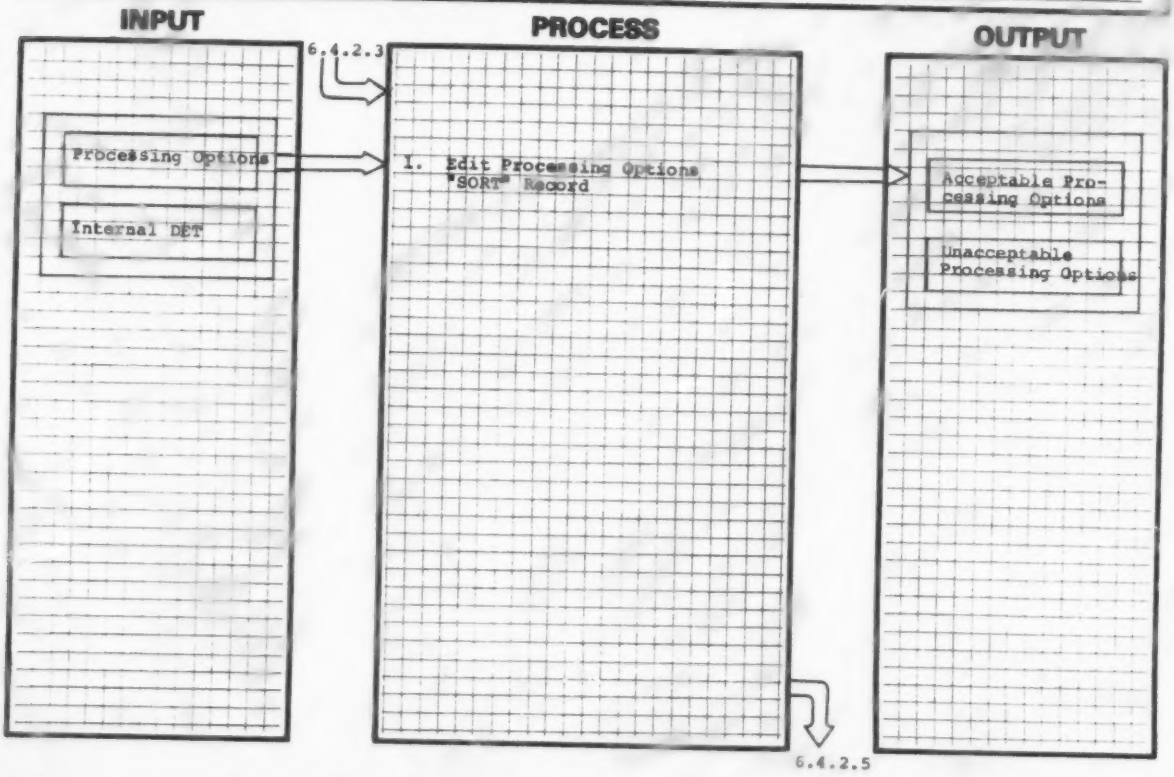
Diagram Type: Detail **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 of 1
Diagram No.: 6.4.2.3 **Description:** Edit Processing Options "SEL2" Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with "SEL2" in positions 1-4 of the records as follows: a. Each non-blank VEFI-SELECT-2-SYMBOL must have a corresponding "SEL1" record, determined by VEFI-SELECT-1-DE-NO being equal to the array position of the VEFI-SELECT-2-SYMBOL being edited. In addition, the VEFI-SELECT-2-SYMBOL must equal one of the following operational symbols: LT = less than EQ = equal to GT = greater than NL = not less than NG = not greater than NX = does not exist blank NOTE: If there are more than 35 "SEL2" records, if no "SEL2" record exists, or if an error exists on a "SEL2" record, then the record is in error and will be written on the Standard Selection Statistics Report. If any errors exist, processing will be terminated.		VAEX040	106 216 105

MODEL STATE INFORMATION SYSTEM

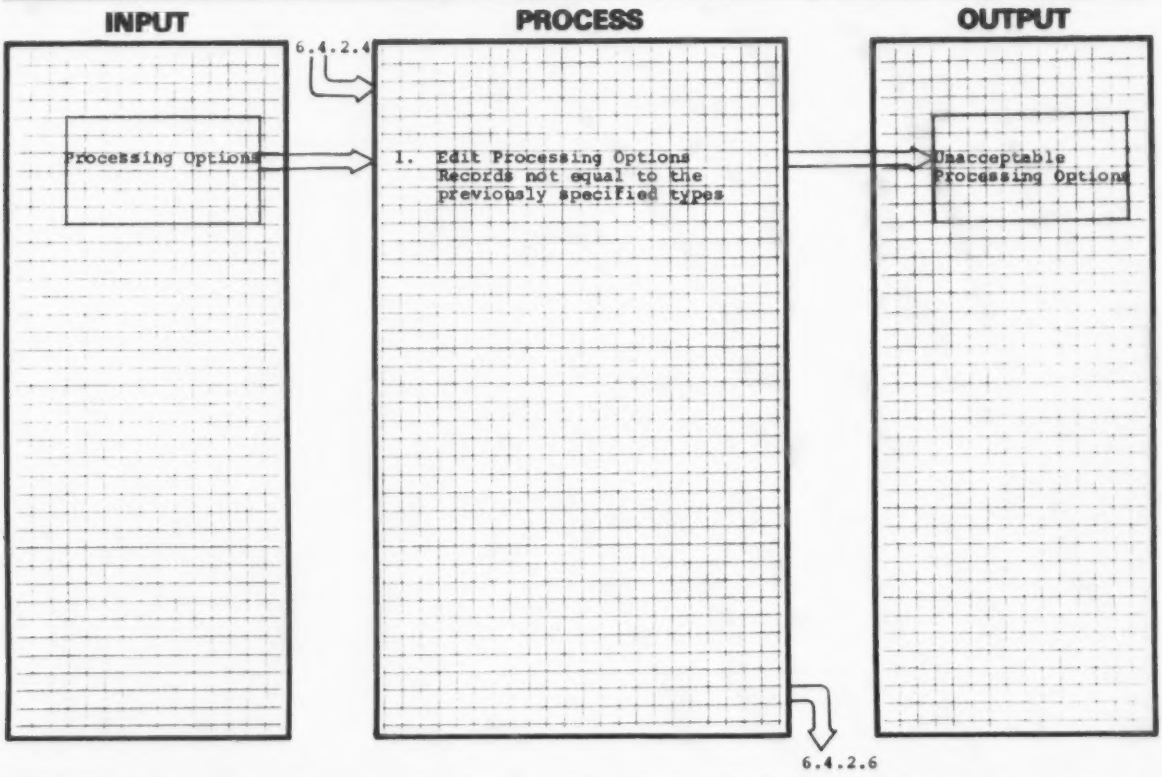
Diagram Type: Detail **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 of 1
Diagram No.: 6.4.2.4 **Description:** Edit Processing Options "SORT" Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with "SORT" in positions 1-4 of the records as follows: a. VEFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the VEFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, VEFI-SORT-MNEMONIC and VEFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. VEFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the VEFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If VEFI-SORT-SEQUENCE is non-blank, then VEFI-SORT-MNEMONIC must be present. c. VEFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If VEFI-SORT-SEQUENCE is non-blank, then VEFI-SORT-MODE must be present. As each VEFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) is totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Selection Statistics Report and processing will be terminated.		VAEX040	207 103

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 of 1
Diagram No.: 6.4.2.5 **Description:** Edit for Other Processing Options Records

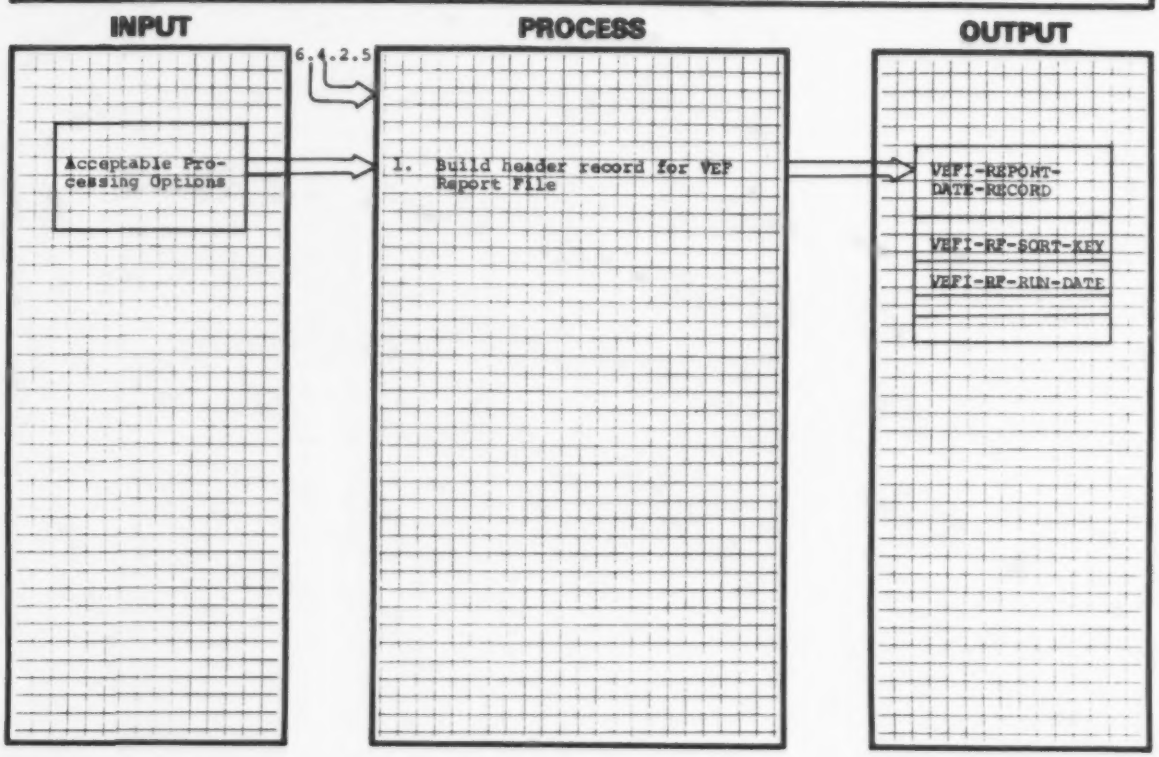


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit all other Processing Options records. All of these records are in error and processing should be terminated.		VAEX040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 **of** 1

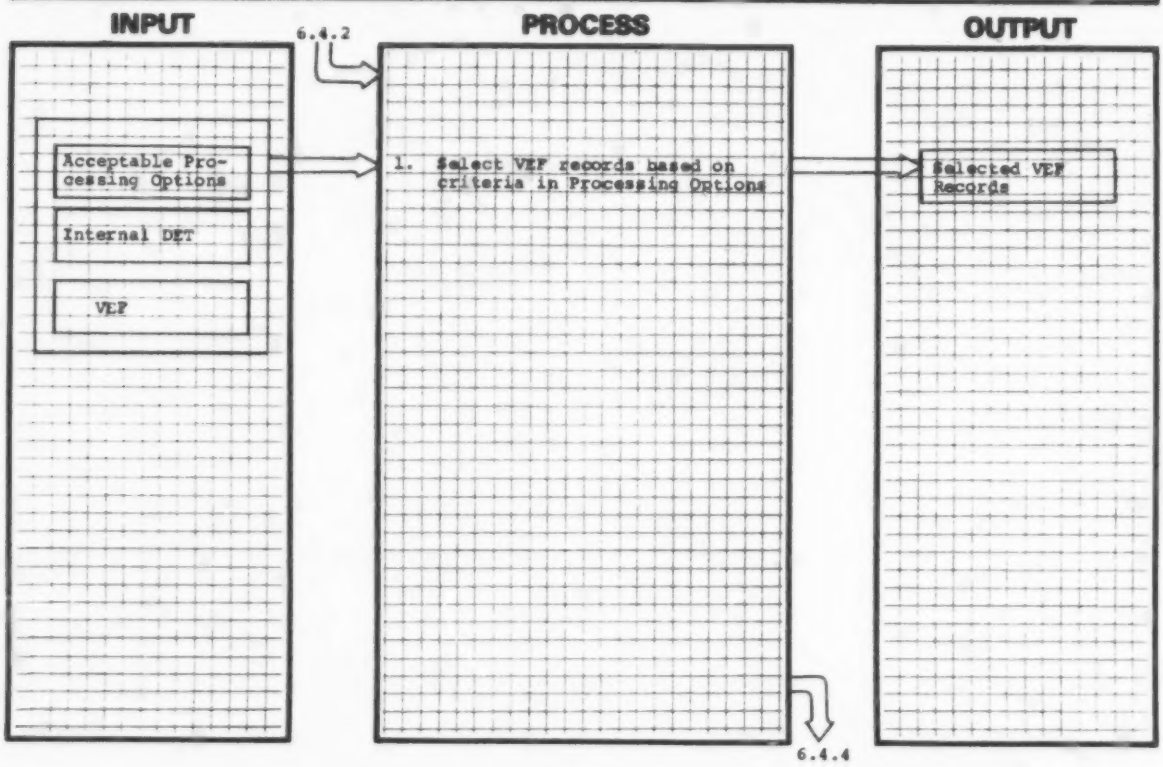
Diagram No.: 6.4.2.6 **Description:** Build Header Record for VEF Report File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Header Record for the Variances and Exemptions Report File. Use 'LOW-VALUES' for the sort key, the date from the processing options for the current date and the accepted report production flags, or their default values if they were incorrectly specified. If processing is to be terminated due to errors in the Processing Options, both report production flags should be set to 'N' and the Variances and Exemptions Report File should be closed.		VAEX040	213

MODEL STATE INFORMATION SYSTEM

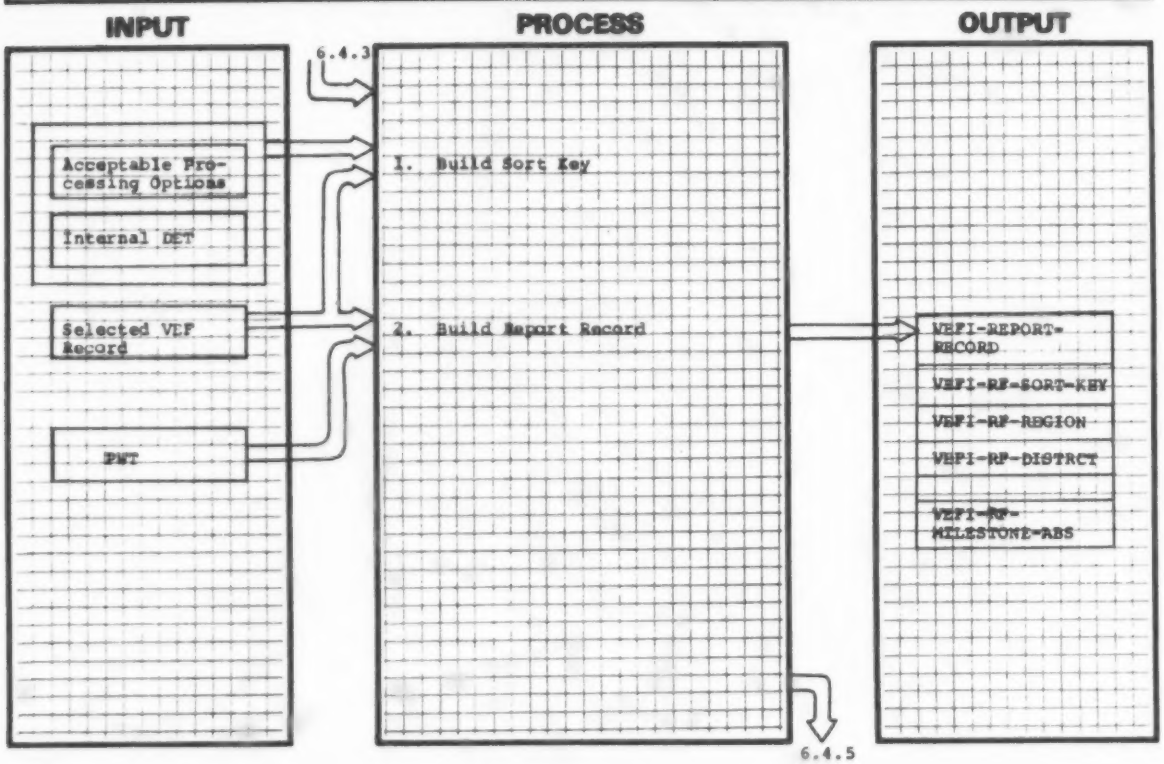
Diagram Type: Detail **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 of 1
Diagram No.: 6.4.3 **Description:** Select VEF Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Read a Variances and Exemptions File (VEF) record. For each mnemonic name, VEFI-SELECT-1-MNEMONIC specified on the "SEL1" records, obtain the corresponding data element value from the VEF record. If the VEFI-SELECT-1-MNEMONIC references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric Portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 If the VEFI-SELECT-1-MNEMONIC represents a value with multiple occurrences (maintained in an array) all such values must be obtained. If the VEFI-SELECT-1-MNEMONIC represents a value whose file length is greater than 15, only use the first fifteen positions. Using those values obtained from the VEF record, examine the logic established in each "SEL2" record to determine if the VEF record should be selected. If the Nth VEFI-SELECT-1-DE-VALUE from the 35 position array of a "SEL2" record is non-blank, then compare the appropriate value from a "SEL1" record (VEFI-SELECT-1-DE-VALUE, where VEFI-SELECT-1-DE-NO = N) with the corresponding value (same mnemonic name) obtained from the VEF record. The comparison between these two values is made according to the Nth operational symbol (see HIPO 6.4.2.3). If there is no unique corresponding value (values exist in an array), then each value in the array must be compared until one satisfies the conditions of the comparison. If the VEF record meets all the above comparison criteria, then the VEF record is selected. Each VEF record is processed using all "SEL2" records so that the selection counts are properly maintained.		VAEX040	212

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances & Exemptions **Date:** 1/28/77 **Page:** 1 of 2
Diagram No.: 6.4.4 **Description:** Build Selected VEF Report Records



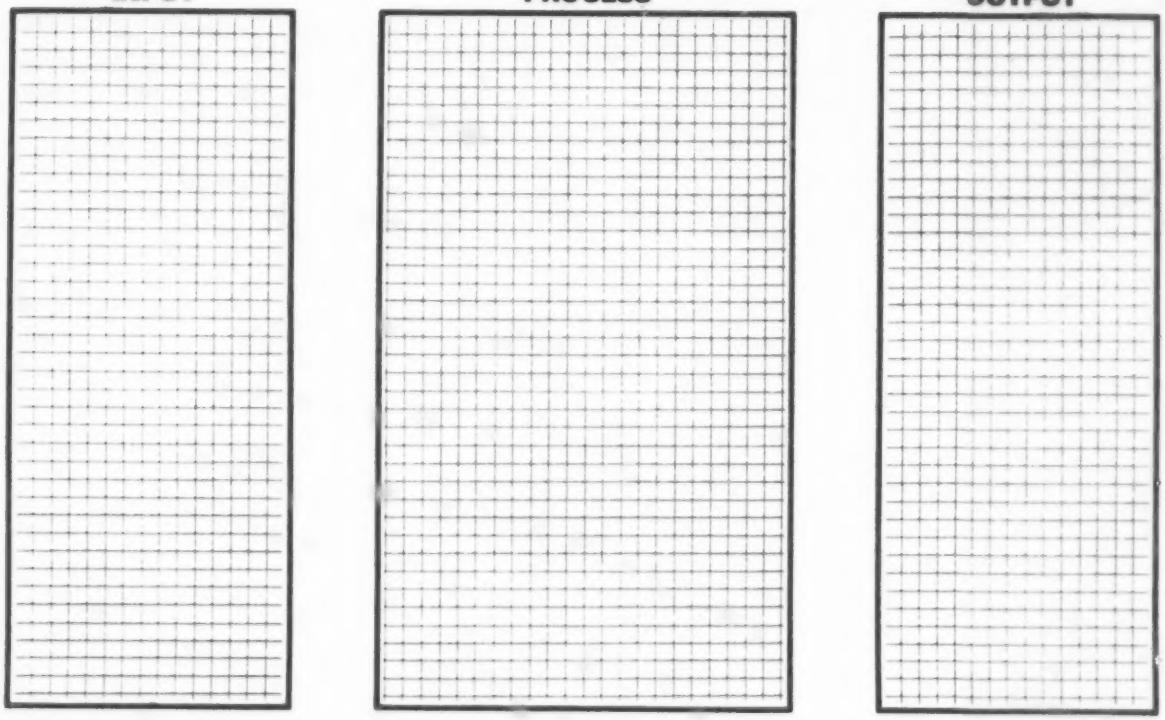
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key, with a maximum length of 30 positions, for each Selected Variances and Exemptions File (VEF) record based on the criteria on the "SORT" Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) Selected VEF record as an array of one character values. b. Match the VEFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the VEF. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the VEF. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 (2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows:		VAEX040	207 210 212 PWSI. 201 PWSI. 234

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances & Exemptions Date: 1/28/77 Page: 2 of 2

Diagram No.: 6.4.4 Description: Build Selected VEF Report Records

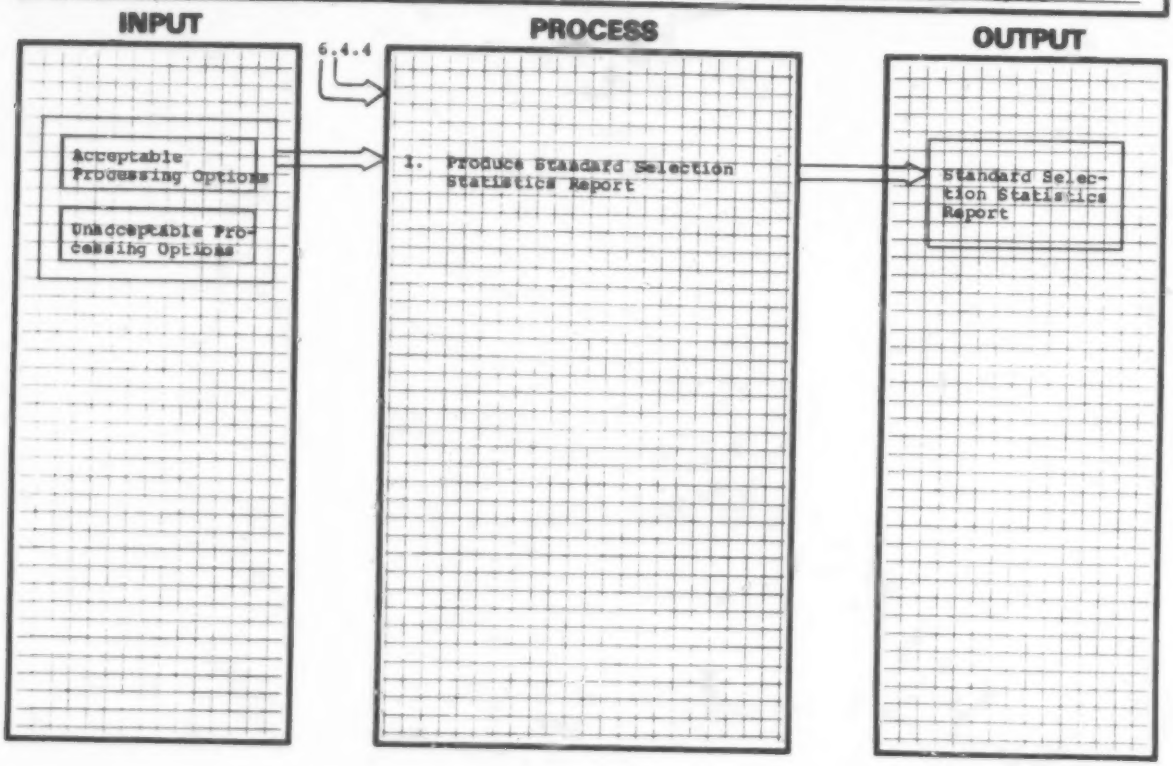
INPUT | **PROCESS** | **OUTPUT**



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(a) If the VEFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the VEFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the VEFI-SORT-MODE = "A" (ascending), move the value obtained in c. to the proper location in the sort key. If the VEFI-SORT-MODE = "D" (descending), redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the VEFI-SORT-SEQUENCE. NOTE: If there are no "SORT" Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 (30 positions)			
2	Information from the Public Water Table (PWT) is combined with the selected VEF record and the sort key to produce the VEFI-REPORT-RECORD.		VAEX040	PWSI. 201 212 210

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Variances & Exemptions Date: 1/28/77 Page: 1 of 1
Diagram No.: 6.4.5 Description: Produce Standard Selection Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Selection Statistics Report is always produced. The following two formats may be used: a. The Standard Selection Statistics Report contains: (1) the sort sequence mnemonics (2) the sort mode (3) the selection criteria (4) the total records selected under each selection criteria (5) the total of all records selected for the report (6) the percent of the file selected. b. If any Processing Options records are in error, the records and associated error messages are produced instead of, or in addition to, the information in a.		VAEX040	MSIS. 312 MSIS. 309

NARRATIVE

SUBSYSTEM: Variances and Exemptions
PROGRAM NAME: VAEX041
DATE: October 15, 1976

I. OBJECTIVES:

The objective of this program is to produce the Variances and Exemptions Condensed Report.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Variances and Exemptions Report File	VEFI-REPORT-DATE-RECORD	VAEX.213
		VEFI-REPORT-RECORD	VAEX.210

B. Processing Options Records:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT FORM
1.	Variances and Exemptions Condensed Report	VAEX.306

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Header lines for the Variances and Exemptions Condensed Report are produced. Dates for the header lines are

obtained from the Variances and Exemptions Report Date Record which is the first record on the Variances and Exemptions Report File. This record will also indicate whether or not the Variances and Exemptions Condensed Report is to be produced. Detail lines of the Variances and Exemptions Condensed Report are produced using Variances and Exemptions Report records from the Variances and Exemptions Report File.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

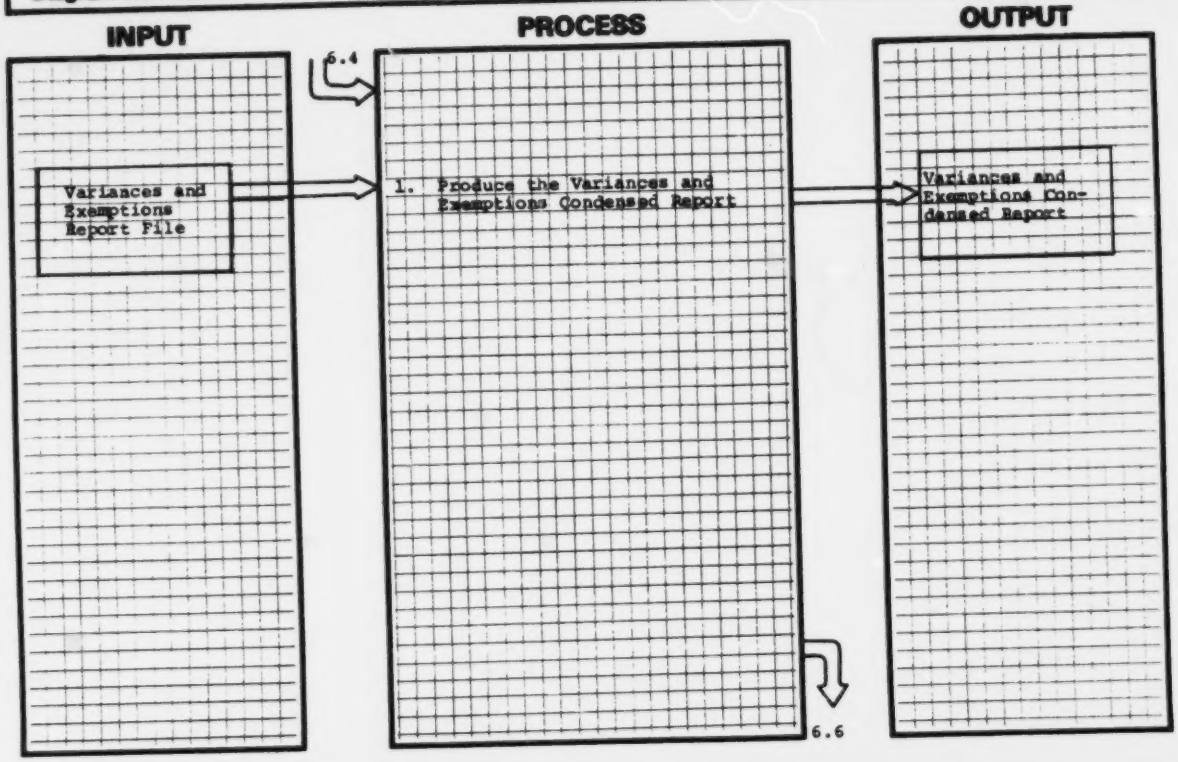
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Variances and Exemptions **Date:** 10-15-76 **Page:** 1 of 1

Diagram No.: 6.5 **Description:** Produce Condensed Report

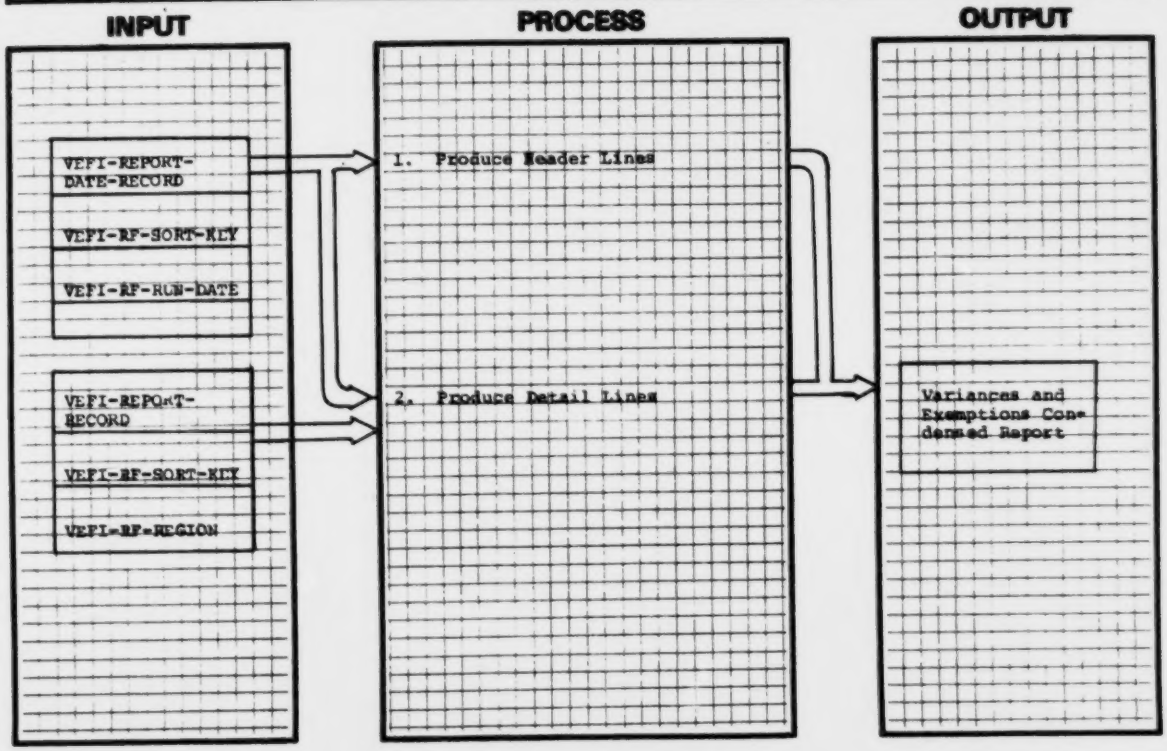


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Variances and Exemptions Condensed Report is produced for each of the Variances and Exemptions selected by program VAEX040. The first record of the Variances and Exemptions Report File indicates whether or not processing is to take place.	6.5.1	VAEX041	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 10-15-76 **Page:** 1 **of** 1

Diagram No.: 6.5.1 **Description:** Produce Condensed Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		MPO	PROGRAM	OTHER
1	If VEFI-RF-CONDENSED-FLAG is "N", then do not produce this report. Otherwise, move VEFI-RF-RUN-DATE to the date field in the header line. Convert the run date to a Julian date and store elsewhere for comparisons with target dates.		VAEX041	213 306
2	Produce one detail line for each detail record on the Variances and Exemptions Report File. This report is to be double spaced. Convert the modified MCL from an absolute value to a decimal value. The number of decimal places is determined by the value of VEFI-RF-MODIFIED-MCL-DEC. EXAMPLE: If VEFI-RF-MODIFIED-MCL equals 12345 and VEFI-RF-MODIFIED-MCL-DEC equals 2, then MCL on the report would be 123.45 The next target is the target date of the nearest active milestone later than the run date. A milestone is active if it has a zero attained date or a delay code which is not equal to "Z".		VAEX041	210 306

NARRATIVE

SUBSYSTEM: Variances and Exemptions
PROGRAM NAME: VAEX050
DATE: November 15, 1976

I. OBJECTIVES:

The objective of this program is to produce the Variances and Exemptions Case History Report.

II. INPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Variances and Exemptions Report File	VEFI-REPORT-DATE-RECORD	VAEX.213
		VEFI-REPORT-RECORD	VAEX.210

B. Processing Options Record:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT FORM
1.	Variances and Exemptions Case History Report	VAEX.307 VAEX.308

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

Header lines for the Variances and Exemptions Case History Report are produced. Dates for the header lines are obtained from the first record of the Variances and Exemptions Report

File. The first record will also indicate whether or not the report is to be produced. Detail lines of the Variances and Exemptions Case History Report are produced using Variances and Exemptions Report Records from the Variances and Exemptions Report file. Milestone repeating groups within each Variances and Exemptions Report Record are ordered by target date in ascending sequence before printing them on the report.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

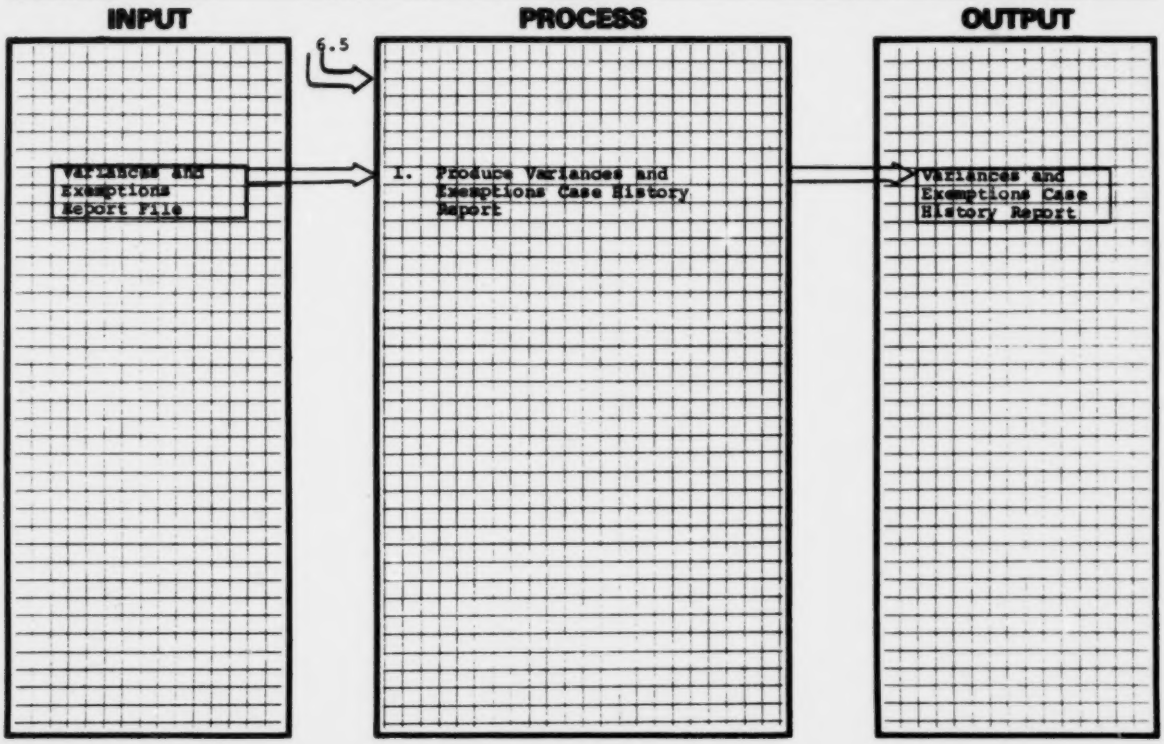
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Variances and Exemptions Date: 11-15-76 Page: 1 of 1

Diagram No.: 6.6 Description: Produce Case History Report

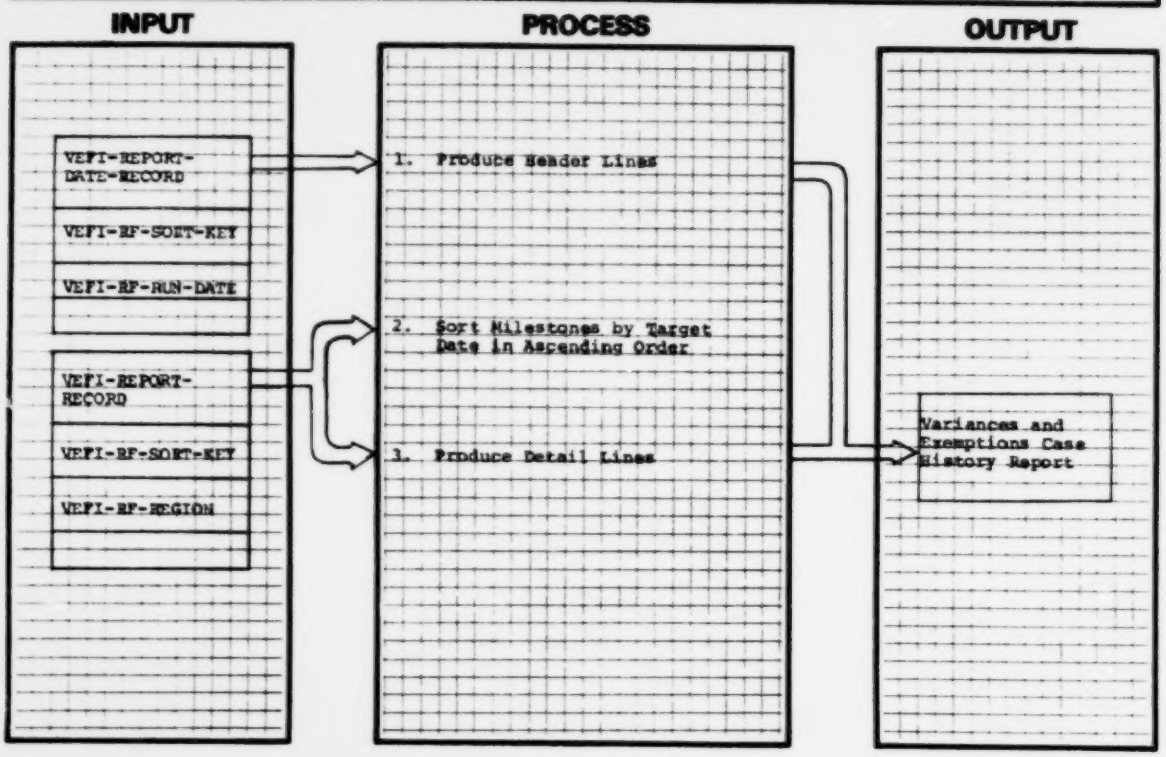


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Case History Report is produced for each selected Variance or Exemption from Module VAEX040 (HIPO 6.4). The report is also produced for every Deleted Variance or Exemption from module VAEX010 (HIPO 6.1). The first record of the Variances and Exemptions Report File may indicate whether or not processing is to take place. The Variances and Exemptions Report file is externally sorted by VEFI-RF-ID within VEFI-RF-SORT-KEY before processing if the file is produced from module VAEX040.	6.6.1	VAEX050	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Variances and Exemptions **Date:** 11-15-76 **Page:** 1 of 1

Diagram No.: 6.6.1 **Description:** Produce Case History Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If VEFI-RF-CASE-HISTORY-FLAG is "N", then do not produce this report. Otherwise, move VEFI-RF-RUN-DATE to the date field in the Header line.		VAEX050	213 307 308
2	Sort the milestone repeating groups by target date so that the milestones appear on the report in ascending order. Use a pointer sort.		VAEX050	210
3	Print only one Variance or Exemption per page. If there are more than two milestones in any one record, then use page 2 format. For each milestone, compute the lag in months by subtracting VEFI-RF-TARGET-DATE from VEFI-RF-ATTAINED DATE. If VEFI-RF-ATTAINED-DATE equals zero, then the lag will be blank. Convert all dates from Julian format (YYDDD) to calendar format (MMDDYY). Convert modified MCL from an absolute value to a decimal value. The number of decimal places is determined by the value of VEFI-RF-MODIFIED-MCL-DEC. EXAMPLE: If VEFI-RF-MODIFIED-MCL equals 12345 and VEFI-RF-MODIFIED-MCL-DEC equals 2, then MCL on the report would be 123.45.		VAEX050	210 307 308

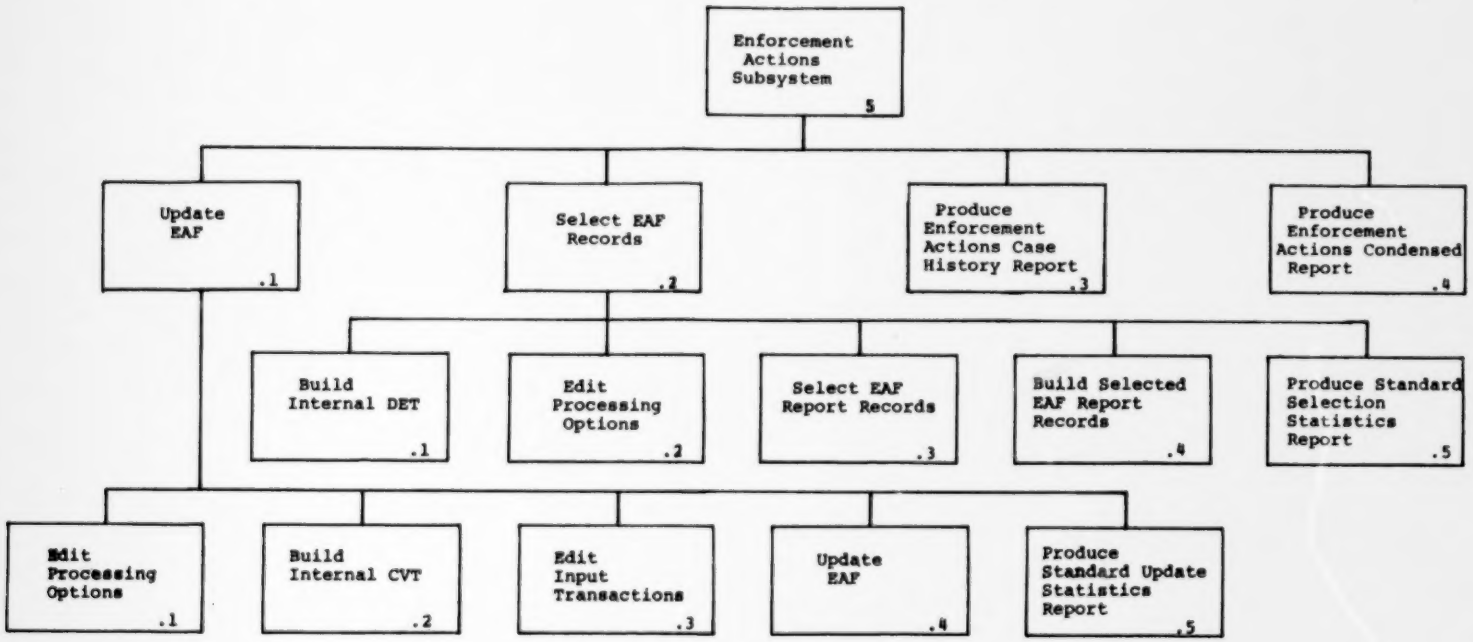
G. Enforcement Actions Subsystem (ENAC)

1. General Description

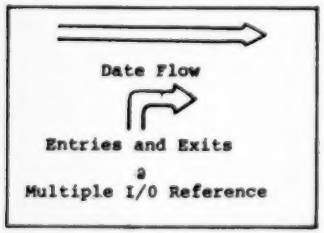
The purpose of this optional subsystem is to provide the state or region with a method for collection, maintenance, and processing of data related to actions performed in connection with enforcing the state's own regulations (or the Federal Regulations) under the Safe Drinking Water Act. The data can then be used for evaluating the effectiveness of different types of enforcement actions. Reporting to EPA of enforcement actions, as required by section 142.15 or the regulations, can also be done automatically using the subsystem by submitting to EPA the reports of the entire Enforcement Actions File (EAF).

2. ENAC Visual Table of Contents

Diagram Type: VTOC
Diagram Number: 5
Subsystem: Enforcement Actions
Description: Enforcement Actions Subsystem VTOC



LEGEND



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5.1.2 Build Internal Code Value Table (CVT)
5.1.3 Edit Input Transactions
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5.1.5 Produce Standard Update Statistics Report
5.2 Select Enforcement Actions File (EAF) Records
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5.2.4 Build Selected Enforcement Actions File (EAF) Report Records
5.2.5 Produce Standard Selection Statistics Report
5.3 Produce Enforcement Actions File Case History Report
5.4 Produce Enforcement Actions File Condensed Report

3. ENAC Subsystem Overview

The major functions of ENAC are:

- Data entry and updating
- Selection and reporting

The subsystem has the following features:

- Flexibility in preparing reports with respect to selection criteria and sorting;
- Subsystem is optional within MSIS;
- Batch processing using sequential files.

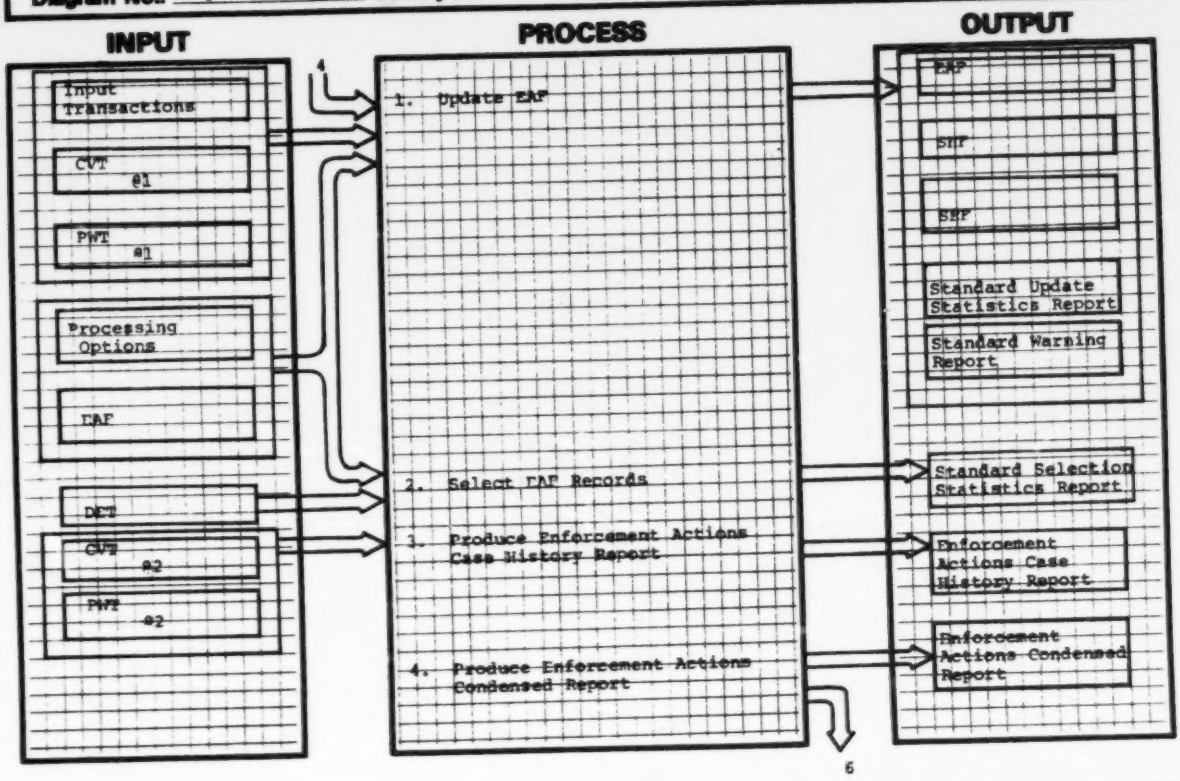
The source of transactions to create and maintain records in the Enforcement Actions File (EAF) is the administrative unit responsible for enforcing the drinking water regulations by formal actions.

A five-digit sequential number is used to identify an Enforcement Action record. This number in positions 1 to 5 of a transaction and transaction code in positions 6 and 7 constitute the transaction key.

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 **of** 1

Diagram No.: 5 **Description:** Enforcement Actions Subsystem



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Update the Enforcement Actions File (EAF) and select records for report production.	5.1	ENAC010	
2	Select EAF Records for report production. Selected records are written to a temporary report file.	5.2	ENAC020	
3	Produce the Enforcement Actions Case History Report from an externally sorted report file.	5.3	ENAC030	
4	Produce the Enforcement Actions Condensed Report from an externally sorted report file.	5.4	ENAC040	

NARRATIVE

SUBSYSTEM: Enforcement Actions
PROGRAM NAME: ENAC010
DATE: January 21, 1977

I. OBJECTIVES:

The objective of this program is to update the Enforcement Actions File (EAF) and produce the Standard Update Statistics Report. It will also build Standard History File (SHF) records, Standard Error File (SEF) records, if necessary, and Enforcement Actions Case History File records for requested and new Enforcement Actions Cases.

II. INPUTS:

A. Record Forms and Layouts:

NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1. Input Transactions	EAFI-ADD-DEL-REQ-RECORD	ENAC.101 ENAC.104	ENAC.204
	EAFI-LEGAL-REF-RECORD	ENAC.101	ENAC.205
	EAFI-PLAINT-DEF-RECORD	ENAC.101	ENAC.206
	EAFI-VIOLATION-RECORD	ENAC.102	ENAC.207
	EAFI-CON-PERM-RECORD	ENAC.102	ENAC.208
	EAFI-CASE-ABSTRACT RECORD	ENAC.103	ENAC.209
	EAFI-MILESTONE-RECORD	ENAC.104	ENAC.210
2. Enforcement Actions File	EAF-RECORD		ENAC.202
3. Code Value Table	CVT-RECORD		MSIS.206
4. Public Water Table	PWT-RECORD PWT-HEADER-RECORD		PWSI.201 PWSI.234

B. Processing Options Record:

NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1. Processing Options	EAFI-PROC-RECORD	ENAC.100	ENAC.201

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Enforcement Actions File	EAF-RECORD		ENAC.202
2.	Enforcement Actions Case History File	EAFI-CH-RECORD EAFI-CH-PROC-RECORD		ENAC.203 ENAC.200
3.	Standard History File	SHF-RECORD MSI-PROC-SHF-RECORD		MSIS.202 MSIS.200
4.	Standard Error File	SEF-RECORD MSI-PROC-SEF-RECORD		MSIS.207 MSIS.208

B. Report Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Standard Update Statistics Report			MSIS.300 MSIS.309
2.	Standard Warning Report			MSIS.310

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. The processing options are edited. If the processing options record is not present, or if the date or one of the option fields is in error, an appropriate error message is produced on the Standard Update Statistics Report and processing is terminated.

2. Selected data elements from the Enfrocement Actions Code Value Table (CVT) and the MS CVT are used to build an internal CVT. Data elements are validated against this internal CVT.

3. The Enforcement Actions File (EAF) input transactions are edited. For each transaction in error, a record is written to the Standard Error File (SEF).

4. The EAF is updated with valid EAF input transactions. Transactions in error are written to the SEF. New and requested case records are written to the Enforcement Actions Case History File. Each time a data element is updated, a record is written to the Standard History File (SHF).

5. When the EAF has been updated, the Standard Update Statistics Report is produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

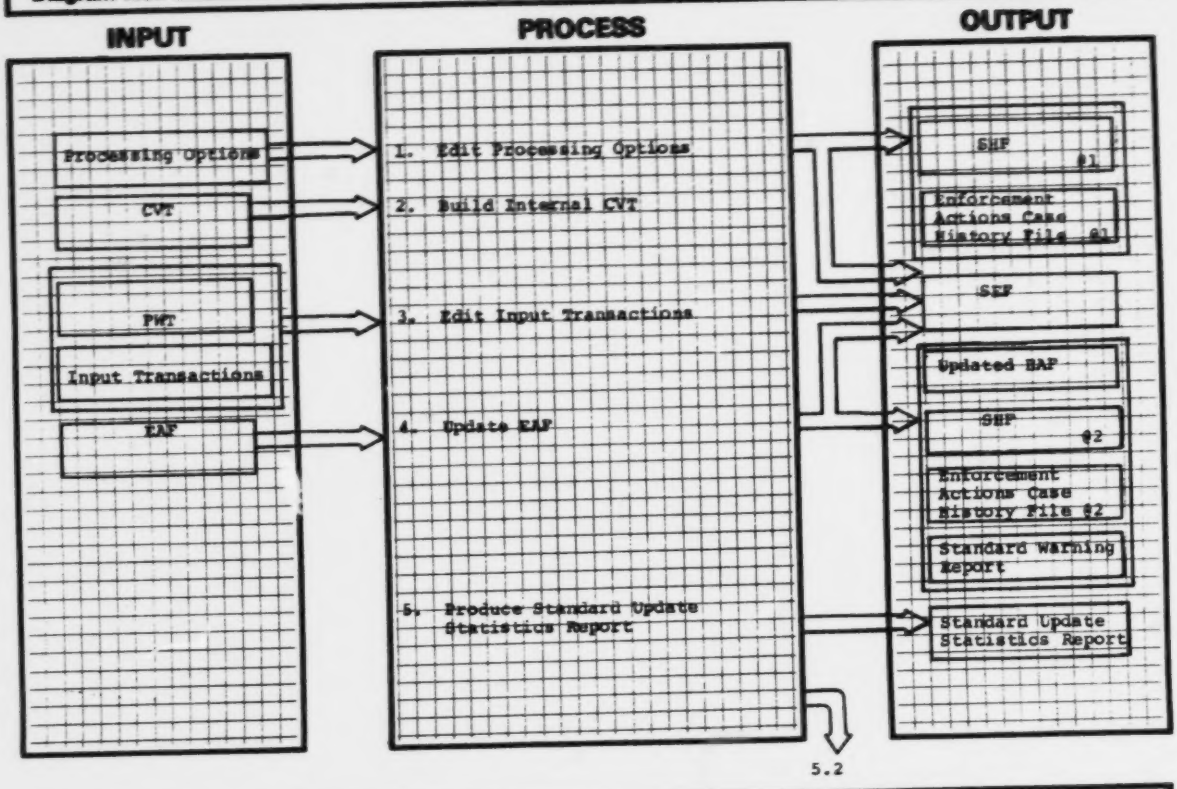
1. Processing Options.
2. Record creation and maintenance form.

B. Data Element Descriptions:

1. Enforcement Actions File

MODEL STATE INFORMATION SYSTEM

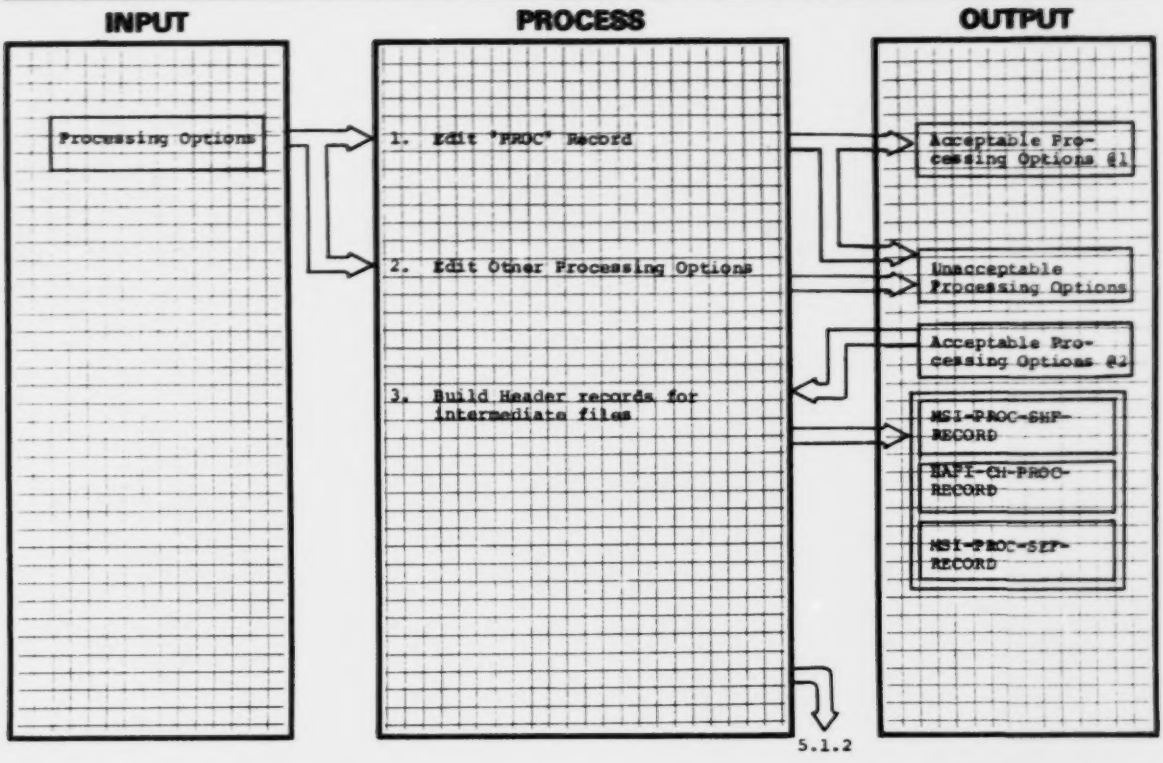
Diagram Type: Overview Subsystem: Enforcement Actions Date: 2/28/77 Page: 1 of 1
Diagram No.: 5.1 Description: Update EAF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options and build header records for all intermediate files.	5.1.1	ENAC010	
2	Build an Internal Code Value Table (CVT) from the CVT.	5.1.2	ENAC010	
3	Edit the input transactions. For each edit error, write a record to the Standard Error File (SEF).	5.1.3	ENAC010	
4	Update the Enforcement Actions File (EAF) according to the input transactions. Errors are written to the SEF for error processing. Each time a data element is updated, a Standard History File (SHF) record is written. An Enforcement Actions Case History File record is built for each new EAF record created and for each EAF record selected by the input transactions. Missing EPA required fields for new records are written on a Standard Warning Report.	5.1.4	ENAC010	
5	Produce the Standard Update Statistics Report.	5.1.5	ENAC010	
	Note: Input Transactions are sorted by Record ID (positions 1-5), Transaction Code (positions 6-7) and Delete Code (position 22) prior to processing.			
	Note: Error codes are located in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 2
Diagram No.: 5.1.1 **Description:** Edit Processing Options



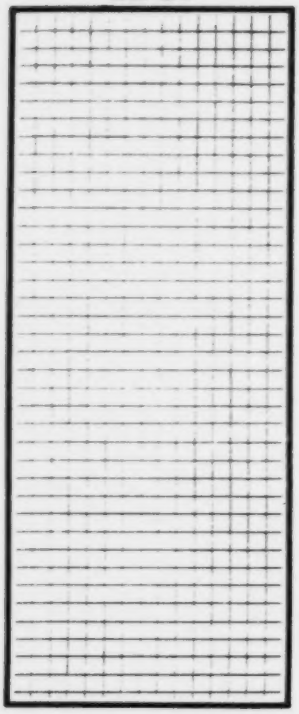
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'PROC' in positions 1-4 of the record as follows: a. Edit the current date (EAFI-PROC-DATE). If it is invalid, then processing will be terminated. If it is valid, convert it to Julian mode for later use. b. Edit the Standard Error File (SEF) Processing Options. Both should be either a 'Y' or 'N'. If there is an invalid entry in one or both fields, then default to 'N' for the invalid entry. c. Edit the Standard History File (SHF) Processing Options. Valid options are '1' through '4'. If the entry is invalid, then default to '1'.		ENAC010	100 201
2	Edit all other Processing Options records. All of these records are in error and processing should be terminated.		ENAC010	100 201
3	The header record for the Standard Error File (SEF) is always built and written in this step. 'LOW VALUES' are placed in positions 1-4. Date is placed in positions 5-10, the options or default options in positions 11 and 12 and a File ID of 'EA' in positions 79-80. If the PROC record is missing or if the date is invalid, this record is built and written with 'LOW VALUES' in positions 1-4 and the rest of the record is blank. The same procedure is used for the header record for the Standard History File (SHF) except position 13 is found in the Processing Options record.		ENAC010	200 MSIS. 200 MSIS. 208

MODEL STATE INFORMATION SYSTEM

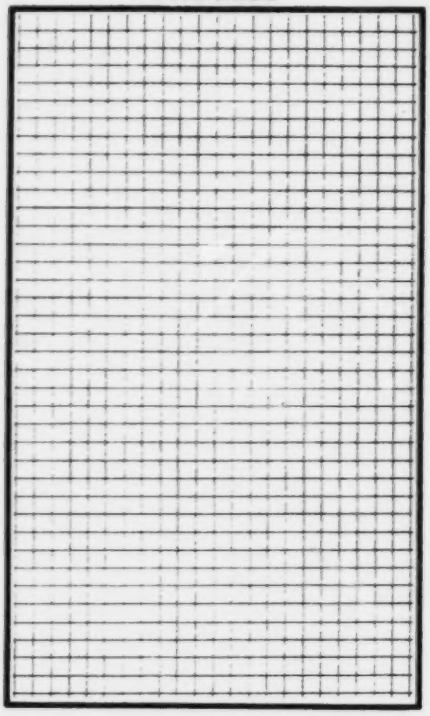
Diagram Type: Detail Subsystem: Enforcement Actions Date: 2/28/77 Page: 2 of 2

Diagram No.: 5.1.1 Description: Edit Processing Options

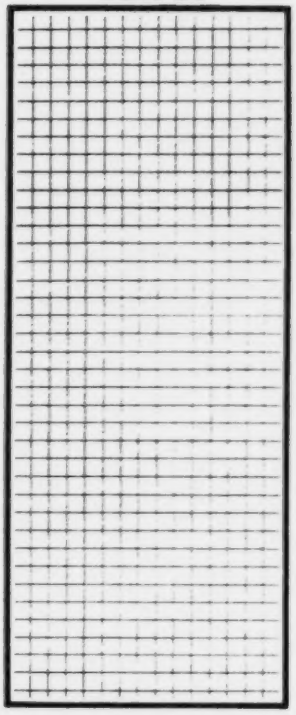
INPUT



PROCESS



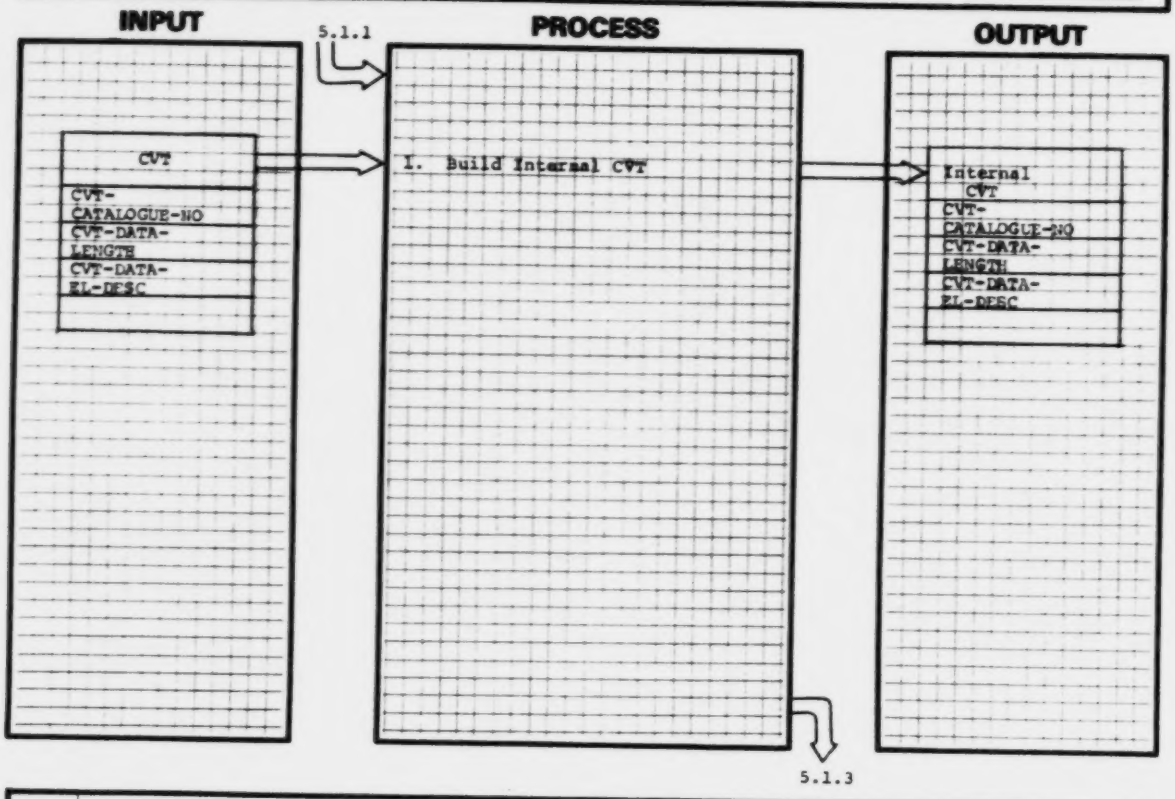
OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The header record for the Enforcement Actions Case History File is build in this manner: 'LOW VALUES' are placed in positions 6-36 and 'YY' is placed in positions 4 and 5; but if the date is invalid or the PROC record is missing, the record is built and written with 'LOW VALUES' in positions 6-36, 'NN' in positions 4-5 and the rest of the record is blank. Note: Unacceptable Processing Options and associated error messages are written on the Standard Update Statistics Report. (See HIPO 5.1.5)			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1
Diagram No.: 5.1.2 **Description:** Build Internal CVT

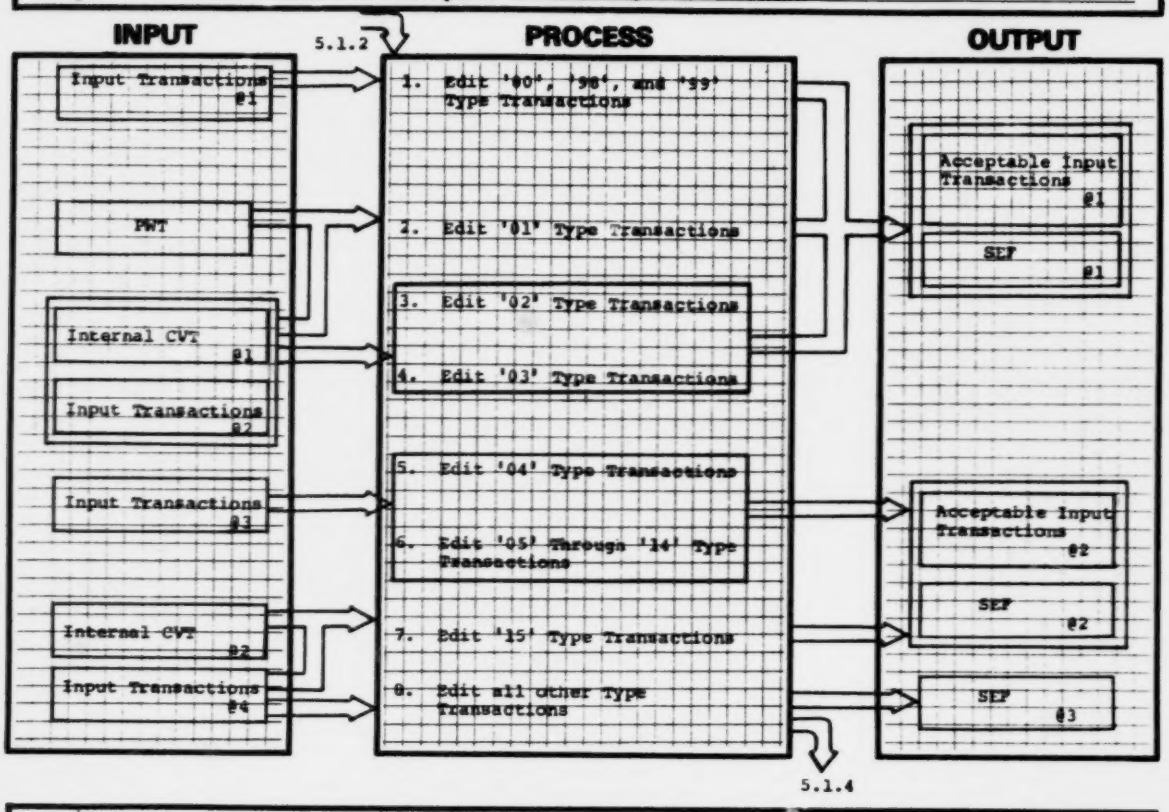


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of data element edit values. Appropriate CVT records are stored internally so that they may be used as edit criteria when certain fields are edited. The edit values are contained in two external CVT files. One has only the values for editing data elements pertaining to the Enforcement Actions File (EAF) and thus is stored in its entirety. The other has values for common data elements, some of which pertain to the EAF. For this program, obtain only acceptable values for Violation type, Contaminant ID and State Code from the Common Table.		ENAC010	MSIS. 206 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1

Diagram No.: 5.1.3 **Description:** Edit Input Transactions

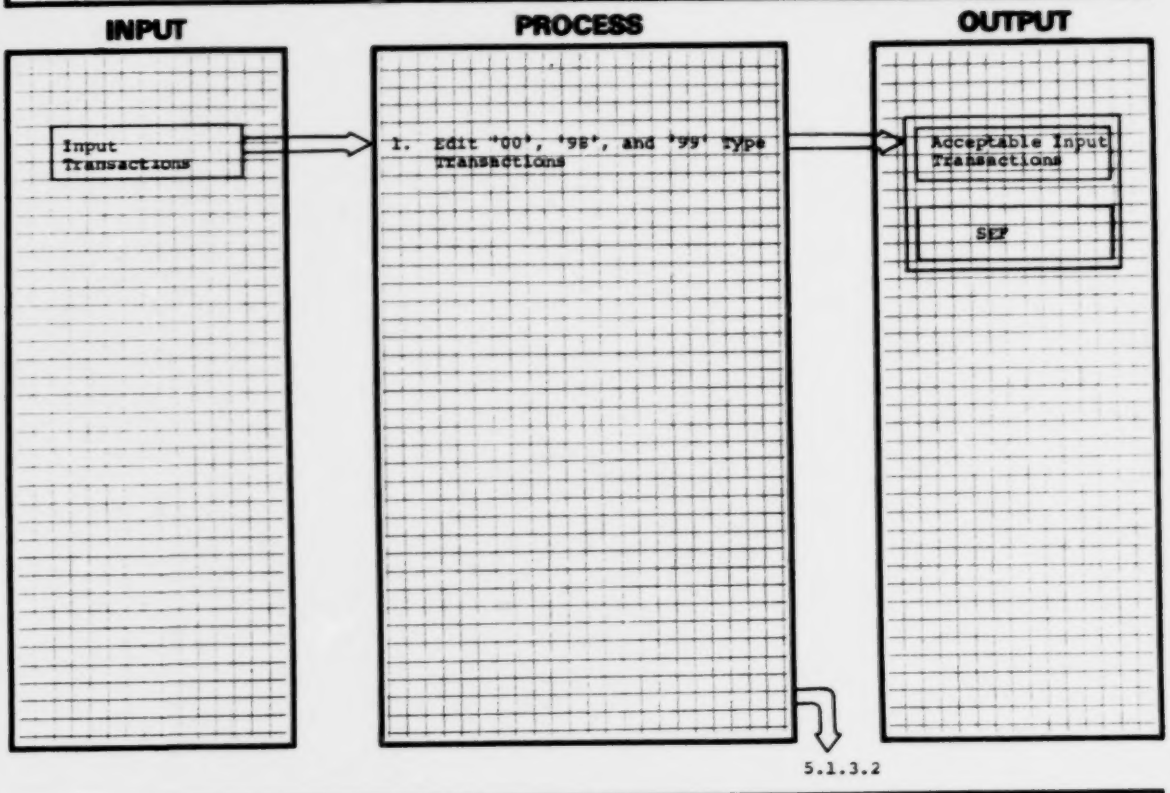


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit transaction types '00', '98', and '99' in positions 6-7.	5.1.3.1	ENAC010	
2	Edit transaction type '01' in positions 6-7.	5.1.3.2	ENAC010	
3	Edit transaction type '02' in positions 6-7.	5.1.3.3	ENAC010	
4	Edit transaction type '03' in positions 6-7.	5.1.3.4	ENAC010	
5	Edit transaction type '04' in positions 6-7.	5.1.3.5	ENAC010	
6	Edit transaction types '05' through '14' in positions 6-7.	5.1.3.6	ENAC010	
7	Edit transaction type '15' in positions 6-7.	5.1.3.7	ENAC010	
8	Edit all other transaction types.	5.1.3.8	ENAC010	
	Note: All transactions in error generate records for the Standard Error File (SEF). The specific error codes and catalogue numbers to be used may be found in tne Data Element Dictionary (DED).			
	Note: The dollar sign ($) in the leftmost position of an otherwise blank field denoting value reinitialization is an acceptable value for all elements unless otherwise noted.			
	Note: Edit criteria is located in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Enforcement Actions Date: 2/28/77 Page: 1 of 1

Diagram No.: 5.1.3.1 Description: Edit '00', '98', and '99' Type Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The '00' input transaction, which triggers the creation of a new Enforcement Actions File (EAF) record, is edited. The '98' input transaction, which is a request for a Case History is also edited. So is the '99' transaction which is a request for a record deletion. For all 3 types, if position 8 does not equal 'Y', the transaction is in error. Also the Case-ID is edited according to criteria on the Data Element Dictionary (DED). Transactions in error are written to the Standard Error File (SEF). If position 8 is not equal to 'Y', use error code 020 for transaction '99', use error code 021 for transaction '00', use error code 024 for transaction '98'. Use catalogue number 907.		ENAC010	204 MSIS. 207 DED

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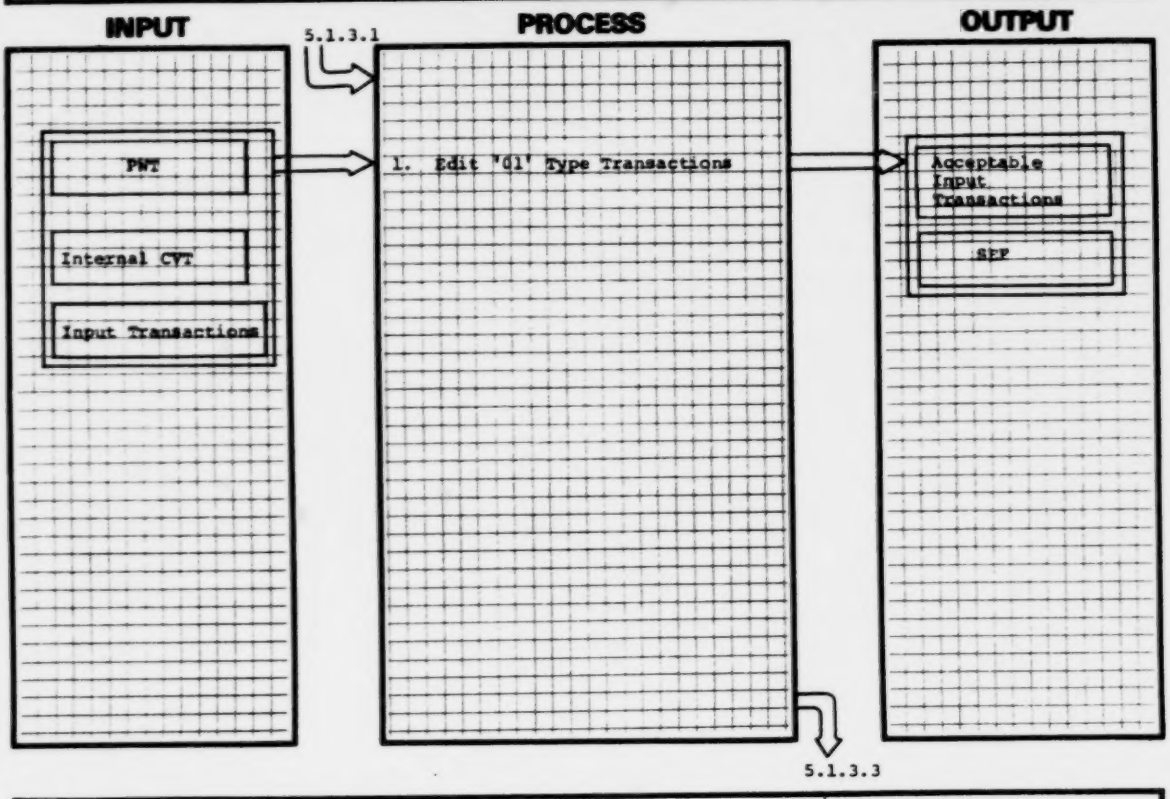
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1
Diagram No.: 5.1.3.2 **Description:** Edit '01' Type Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Data elements of the Enforcement Actions File (EAF) input transactions type '01' are edited according to the criteria on the Data Element Dictionary (DED). In addition, legal status and PWS-STATE are validated by using the DED's catalogue number to match it with the correct CV-CAT-NO on the internal Code Value Table (CVT). Also, the Public Water System (PWS) ID is validated directly against PWT-ID on the Public Water Table (PWT). Any of these found in error are written to the Standard Error File (SEF). If a transaction with a code of '00' and the same record ID was previously rejected, this transaction is also rejected.		ENAC010	205 MSIS. 206 MSIS. 207 PWSI. 201 PWSI. 234 DED

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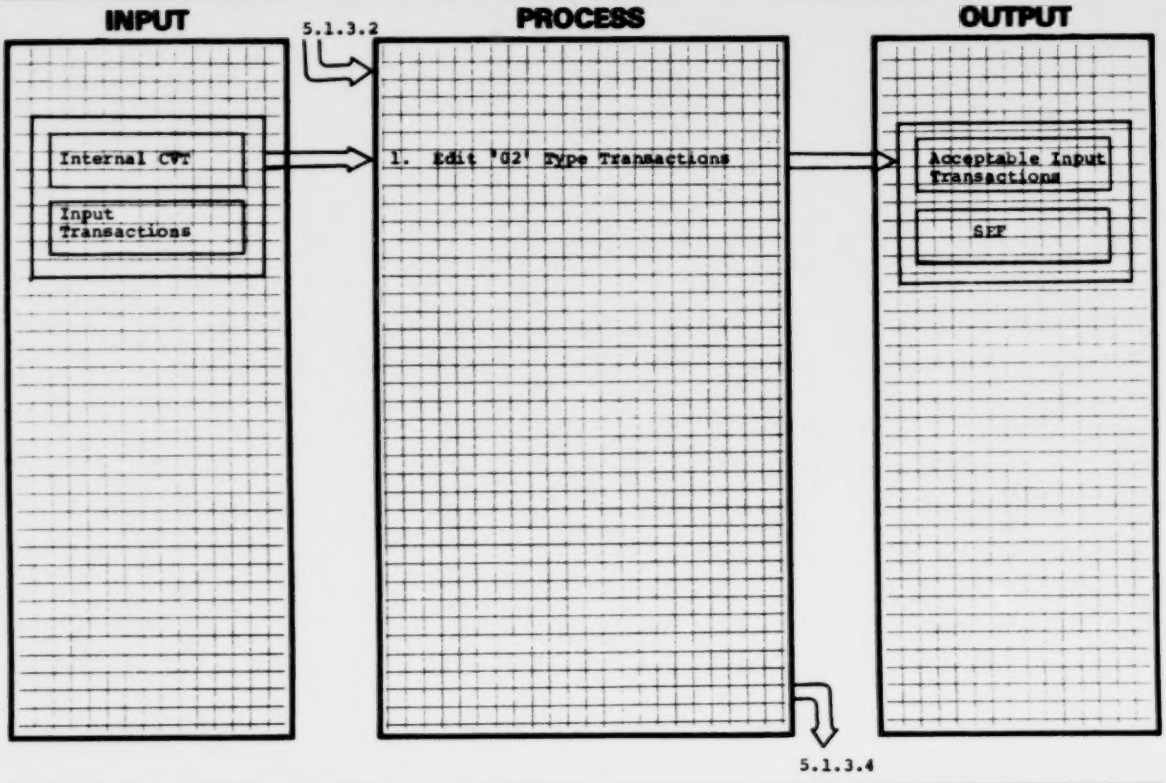
Diagram Type: Detail Subsystem: Enforcement Actions Date: 2/28/77 Page: 1 of 1

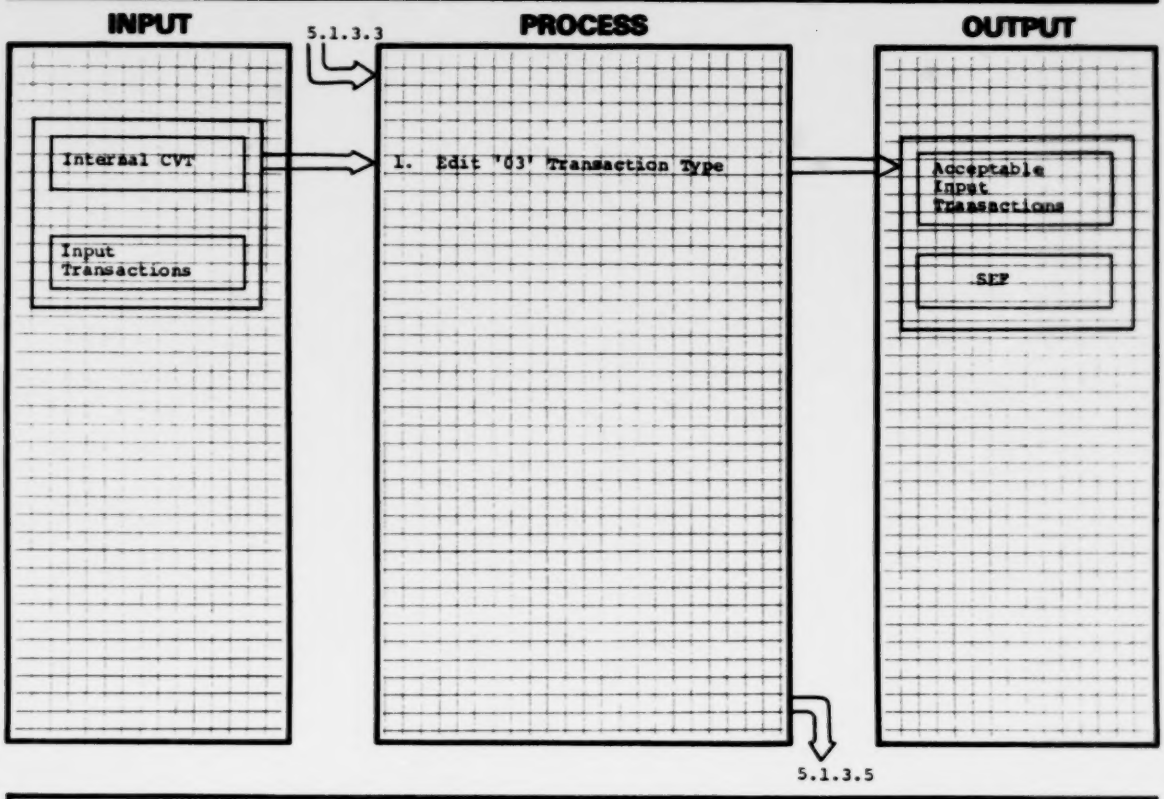
Diagram No.: 5.1.3.3 Description: Edit '02' Type Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Data elements of the Enforcement Actions File (EAF) input transactions type '02' are edited according to the criteria on the Data Element Dictionary (DED). In addition, plaintiff type and defendant type are validated by using the DED's catalogue number to match it with the correct catalogue number on the internal Code Value Table (CVT). Any of these found in error are written to the Standard Error File (SEF). If a transaction with a code of '00' and the same record ID was previously rejected, this transaction is also rejected.		ENAC010	206 MSIS. 206 MSIS. 207 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1
Diagram No.: 5.1.3.4 **Description:** Edit '03' Type Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Data elements of the Enforcement Actions File (EAF) input transactions type '03' are edited according to the criteria on the Data Element Dictionary (DED). In addition, Violation-Type and Contaminant-ID are validated by using the DED catalogue number to match it with the correct catalogue number on the internal Code Value Table (CVT). This validation is not performed if there is a 'Y' in position 22. Acceptable values for the delete flag (position 22) are 'Y' or blank. If there is an invalid value in position 22, then assign error code 020 and catalogue number 911 and reject the transactions. Any transactions found in error are written to the Standard Error File (SEF). If a transaction with a code of '00' and the same Record ID was previously rejected, this transaction is also rejected. The dollar sign ($) indicating value reinitialization is not valid for violation date or violation type.		ENAC010	102 207 MSIS. 206 MSIS. 207 DED

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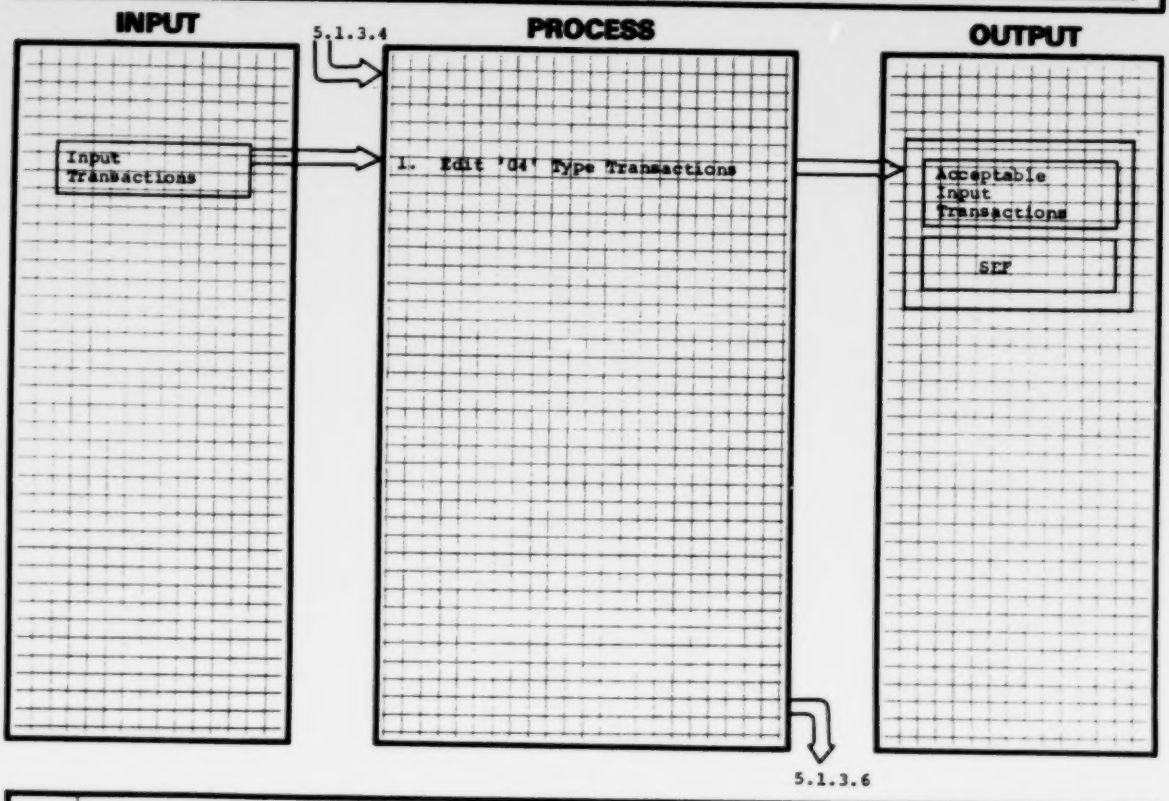
Diagram Type: Detail Subsystem: Enforcement Actions Date: 2/28/77 Page: 1 of 1
Diagram No.: 5.1.3.5 Description: Edit '04' Type Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Data elements of the Enforcement Actions File (EAF) input transactions type '04' are edited according to criteria on the Data Element Dictionary (DED). Any edit errors that are detected are written to the Standard Error File (SEF). If a transaction with a code of '00' and the same Record ID was previously rejected, this transaction is also rejected.		ENAC010	208 MSIS. 207 DED

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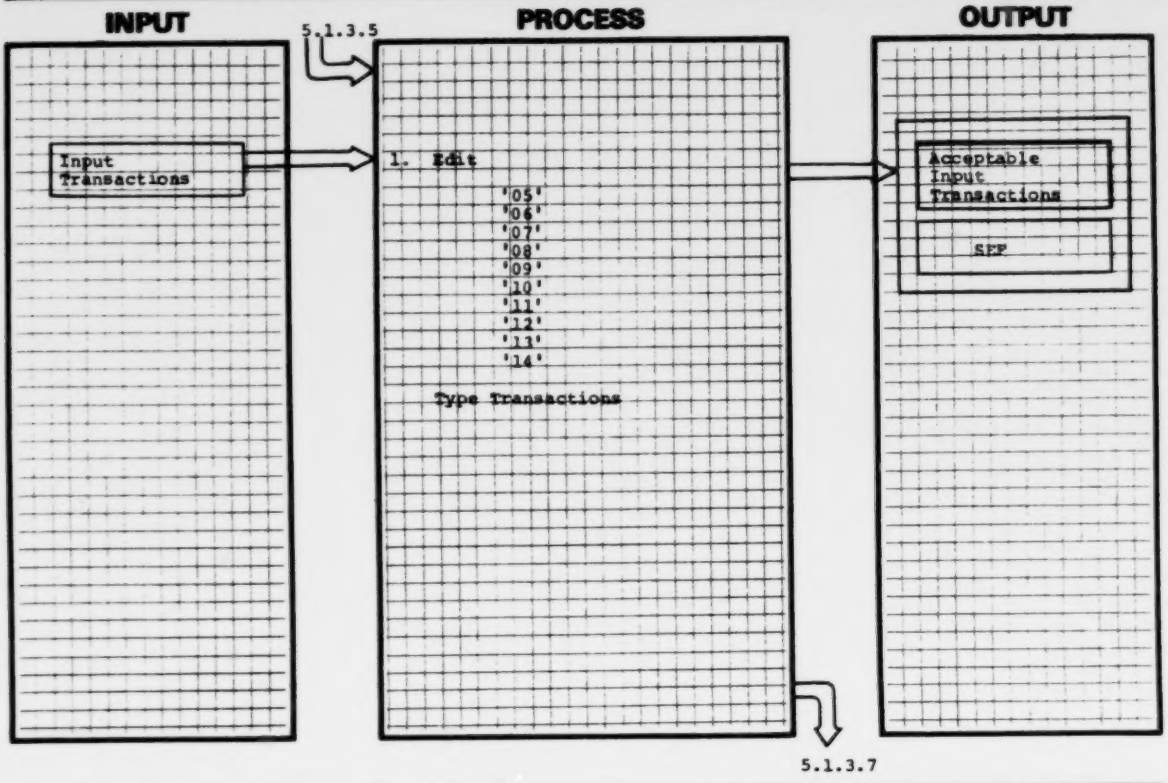
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 **of** 1

Diagram No.: 5.1.3.6 **Description:** Edit '05' Through '14' Type Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Data elements of the Enforcement Actions File (EAF) input transactions types 05-14 are edited according to the criteria on the Data Element Dictionary (DED). Any edit errors that are detected are written to the Standard Error File (SEF). If a transaction with a code of '00' and the same Record ID was previously rejected, this transaction is also rejected.		ENAC010	209 MSIS. 207 DED

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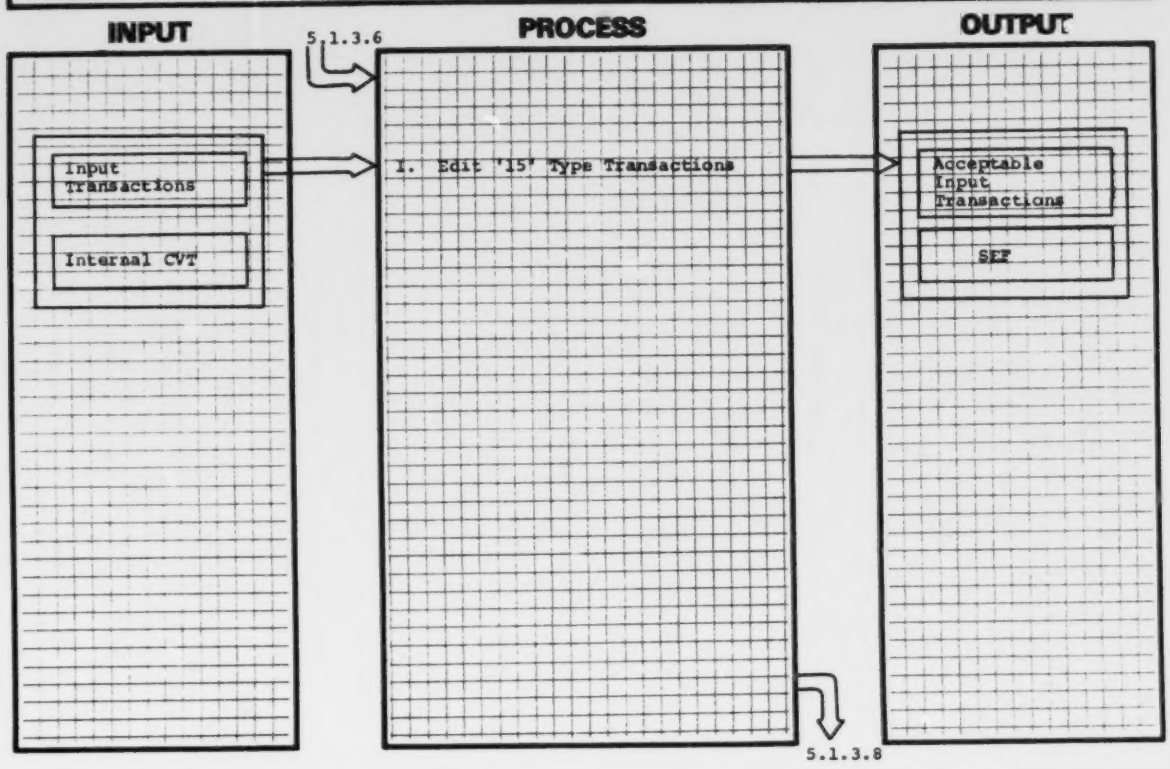
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1

Diagram No.: 5.1.3.7 **Description:** Edit '15' Type Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Data elements of the Enforcement Actions File (EAF) input transactions type '15' are edited according to the criteria on the Data Element Dictionary (DED). In addition, milestone code is validated by using the DED catalogue number to match it with the correct catalogue number on the internal Code Value Table (CVT). This validation is not performed if position 22 is a 'Y'. Acceptable values for the delete flag (position 22) are 'Y' or blank. If there is an invalid value in position 22, then assign error code 020 and catalogue number 911 and reject the transaction. Any transactions found in error are written to the Standard Error File (SEF). If a transaction with a code of '00' and the same Record ID was previously rejected, this transaction is also rejected. The dollar sign ($) indicating value reinitialization is not valid for target date or milestone code.		ENAC010	210 MSIS. 206 MSIS. 207 DED

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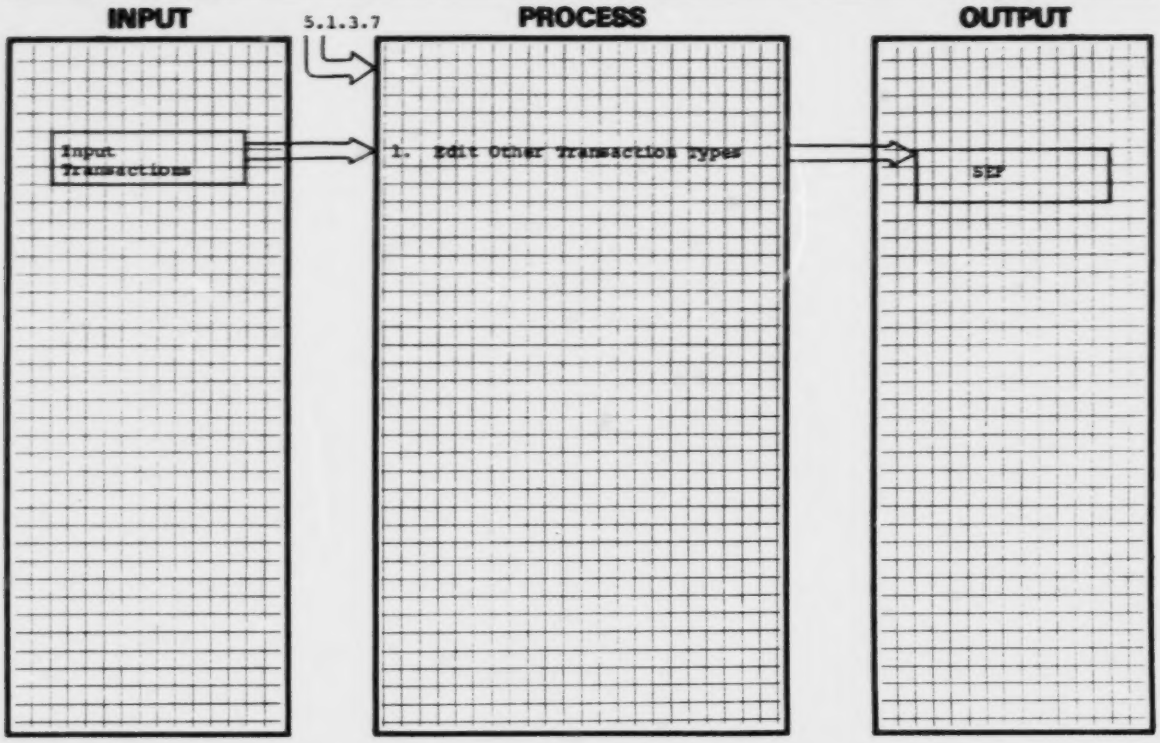
Diagram Type: Detail Subsystem: Enforcement Actions Date: 2/28/77 Page: 1 of 1

Diagram No.: 5.1.3.8 Description: Edit all Other Type Transactions



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	All other type Enforcement Actions File (EAF) input transactions are in error and are written to the Standard Error File (SEF). Error code 017 and catalogue number 904 are assigned.		ENAC010	MSIS. 207

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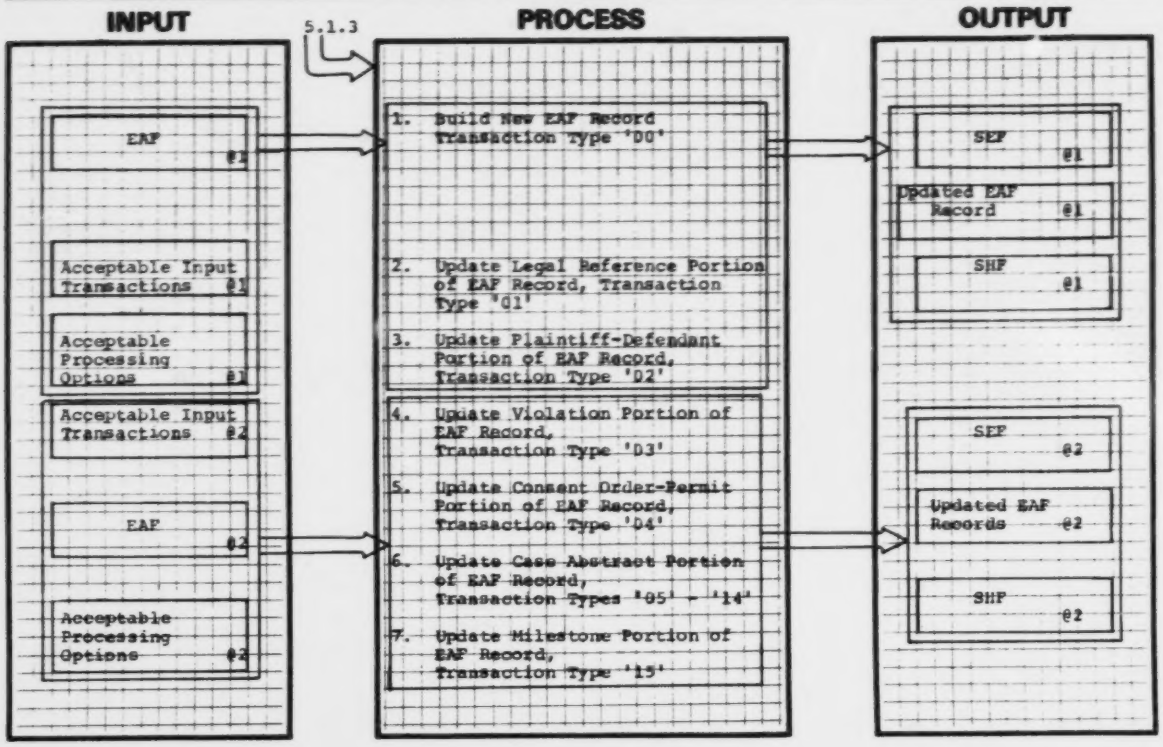
Diagram Type: Overview Subsystem: Enforcement Actions Date: 2/28/77 Page: 1 of 2

Diagram No.: 5.1.4 Description: Update EAF

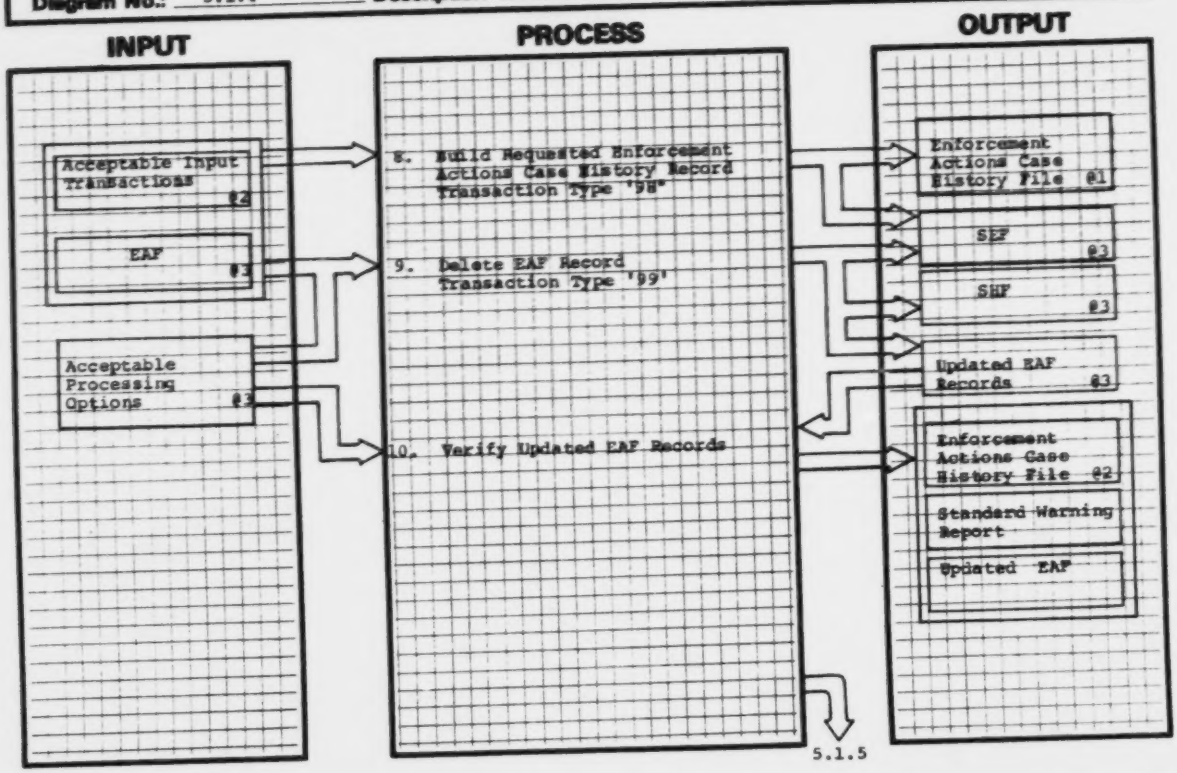

INPUT
5.1.3
PROCESS
OUTPUT
EAF @1
Acceptable Input Transactions @1
Acceptable Processing Options @1
Acceptable Input Transactions @2
EAF @2
Acceptable Processing Options @2
1. Build New EAF Record Transaction Type '00'
2. Update Legal Reference Portion of EAF Record, Transaction Type '01'
3. Update Plaintiff-Defendant Portion of EAF Record, Transaction Type '02'
4. Update Violation Portion of EAF Record, Transaction Type '03'
5. Update Consent Order-Permit Portion of EAF Record, Transaction Type '04'
6. Update Case Abstract Portion of EAF Record, Transaction Types '05' - '14'
7. Update Milestone Portion of EAF Record, Transaction Type '15'
SEF @1
Updated EAF Record @1
SHF @1
SEF @2
Updated EAF Records @2
SHF @2

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The acceptable input transactions are used to update the Enforcement Actions File (EAF). The action that is taken depends on the Transaction Type, which is determined by positions 6-7 of the record.			
1	Input transactions type '00' are used to build a new EAF record.	5.1.4.1	ENAC010	
2	Input transactions type '01' are used to update the legal reference portion of an EAF record. Also, the absence of an EPA required field may cause a warning to be produced for the Standard Warning Report.	5.1.4.2	ENAC010	
3	Input transactions type '02' are used to update the plaintiff-defendant portion of the EAF record. Also, the absence of an EPA required field may cause a warning to be produced for the Standard Warning Report.	5.1.4.3	ENAC010	
4	Input transactions type '03' are used to update the violations portion of the EAF record.	5.1.4.4	ENAC010	
5	Input transactions type '04' are used to update the consent order - permit portion of the EAF record.	5.1.4.5	ENAC010	
6	Input transactions type '05' through '14' are used to update the case abstract portion of the Enforcement Actions File (EAF).	5.1.4.6	ENAC010	
7	Input transactions type '15' are used to update the milestone portion of the EAF record.	5.1.4.7	ENAC010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Enforcement Actions Date: 2/28/77 Page: 2 of 2

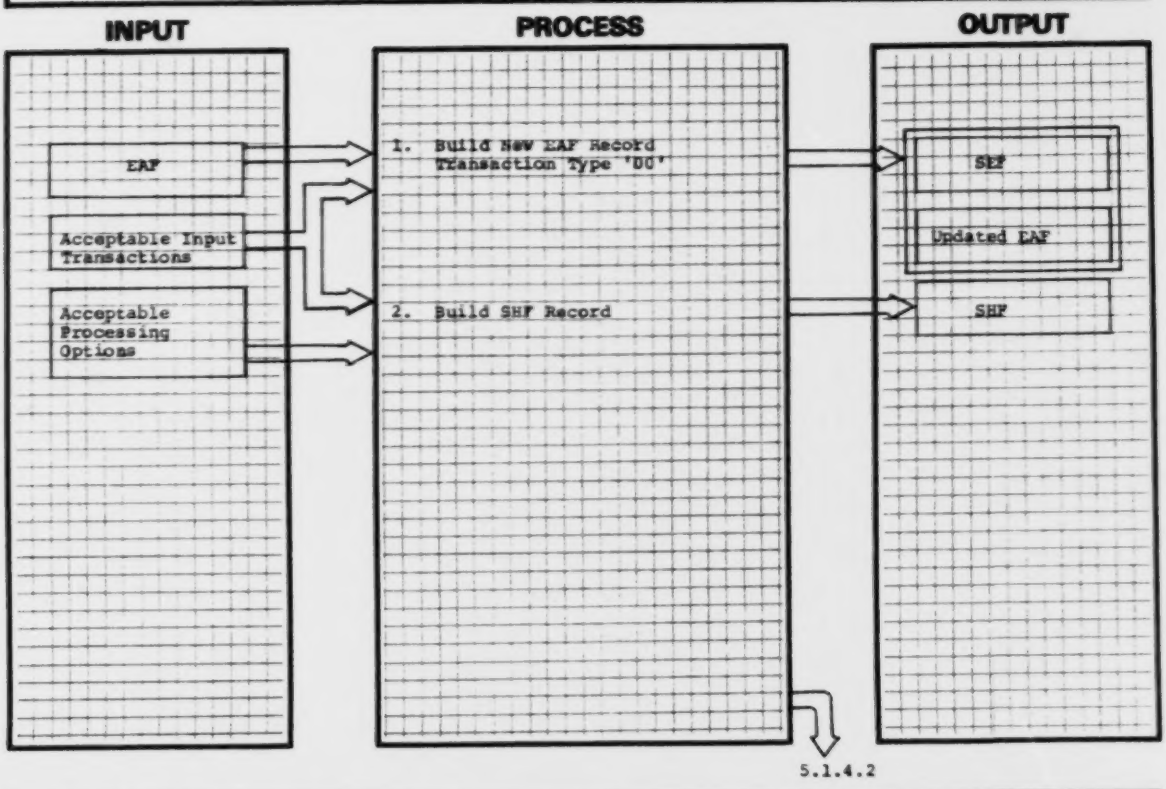
Diagram No.: 5.1.4 Description: Update EAF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
8	Input transactions type '98' are used to build a Case History File (CHF) record for a requested EAF record.	5.1.4.8	ENAC010	
9	Input transactions type '99' are used to delete an EAF record.	5.1.4.9	ENAC010	
10	Updated Enforcement Actions File (EAF) records are verified to ensure that no EPA required fields are missing. New EAF records are written to the Enforcement Actions Case History File.	5.1.4.10	ENAC010	
	Note: Any transactions in error are written to the Standard Error File (SEF). Also a Standard History File (SHF) Record is built for each data element that is updated, for each new record and for each record deletion.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1
Diagram No.: 5.1.4.1 **Description:** Build New EAF Record Transaction Type '00'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Enforcement Actions File (EAF) '00' transaction is validated against the current EAF. If a matching Case-ID is found on the EAF, the update transaction is in error and a record is written to the Standard Error File (SEF). A switch is set so that any other transaction with the same Case-ID can be identified as an error. This is to ensure that changes will not be made to the wrong record. If the '00' transaction passes validation, a new EAF record is written with Case-ID as the only data element. All other data elements will be initialized as follows: numeric data elements to zeros, alphanumeric data elements to blanks.		ENAC010	101 202 204 MSIS. 207 DED
2	A Standard History File (SHF) record is built. Move 'EA' to SHF-FILE-ID. Move EAFI-ADD-DEL-REQ-CASE-ID to SHF-RECORD-ID and to SHF-NEW-VALUE. Move the current date from the 'PROC' record to SHF-CUR-UPDATE-DATE and to SHF-LAST-UPDATE-DATE. Move blanks to SHF-OLD-VALUE. The value for SHF-DATA-ELEMENT-CODE may be obtained from the Data Element Dictionary (DED) for Case-ID.		ENAC010	201 MSIS. 202 DED

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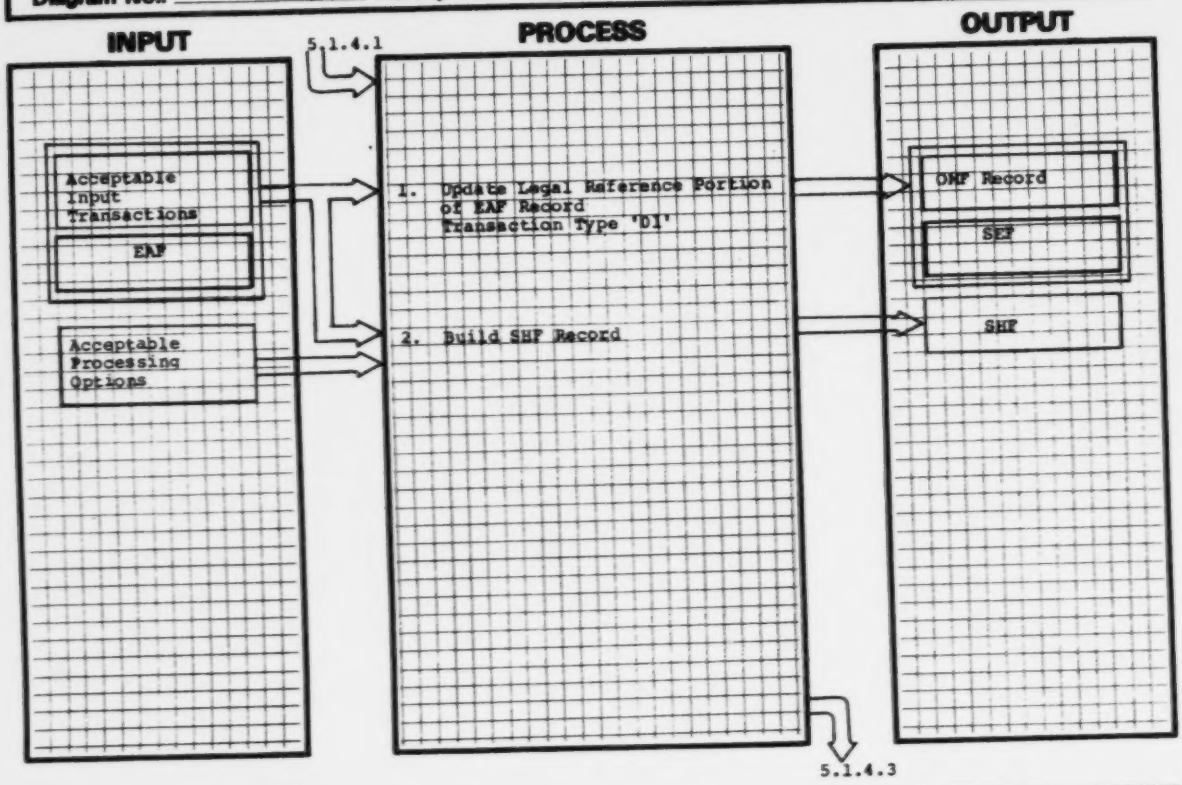
Diagram Type: Detail Subsystem: Enforcement Actions Date: 2/28/77 Page: 1 of 1

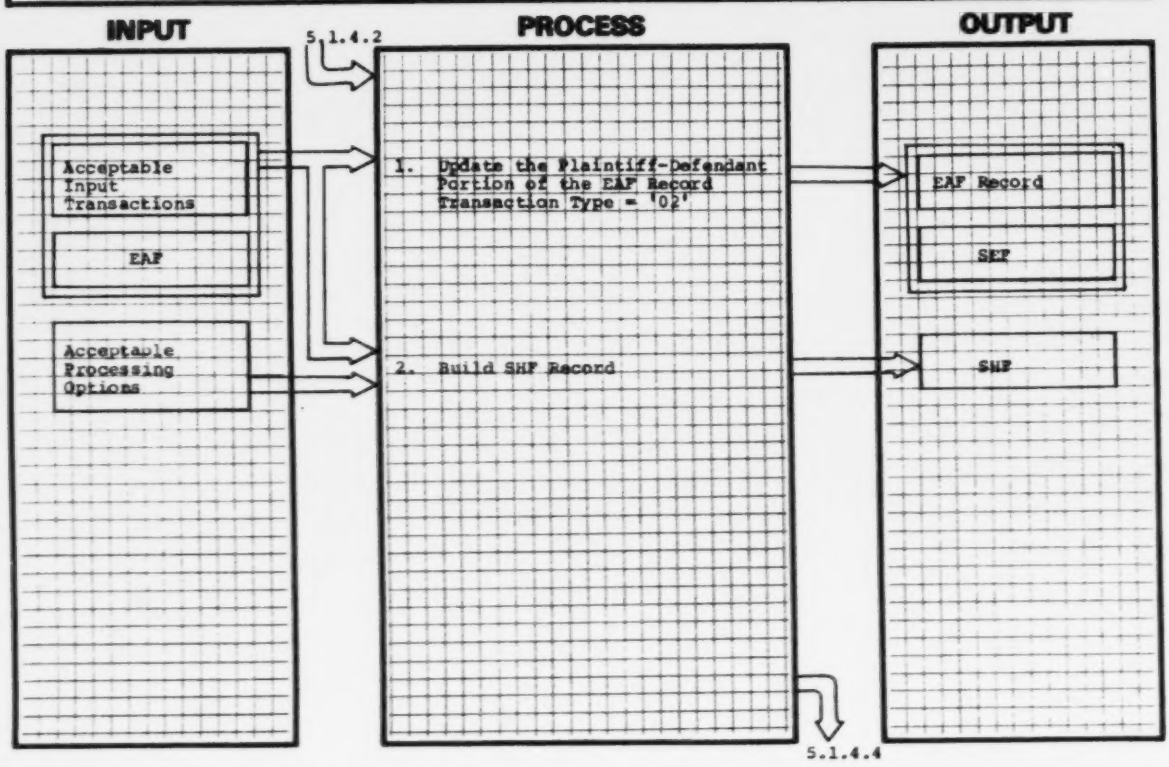
Diagram No.: 5.1.4.2 Description: Update Legal Reference Portion of EAF Record, Transaction Type '01'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '01' allows entry or updating of the Legal Reference portion of the Enforcement Actions File (EAF) records. Non-blank fields on the acceptable input transactions are used to replace the corresponding data elements on the EAF record. If the Case-ID specified on the transaction is not present on the EAF, the entire transaction is in error and is written to the Standard Error File (SEF). A dollar sign ($) in the left-most position of an otherwise blank input transaction field indicates that the corresponding data element on the EAF record should be reinitialized. (See HIPO 5.1.4.1 for values)		ENAC010	101 205 202 MSIS. 207
2	Build a Standard History File (SHF) Record for each of the updated elements. Use the data element's catalogue number for the data element code. Use the old value of the element for SHF-OLD-VALUE. Use the new value of the element for SHF-NEW-VALUE. (See HIPO 5.1.4.1 for other values)		ENAC010	MSIS. 202 101 202 205

MODEL STATE INFORMATION SYSTEM

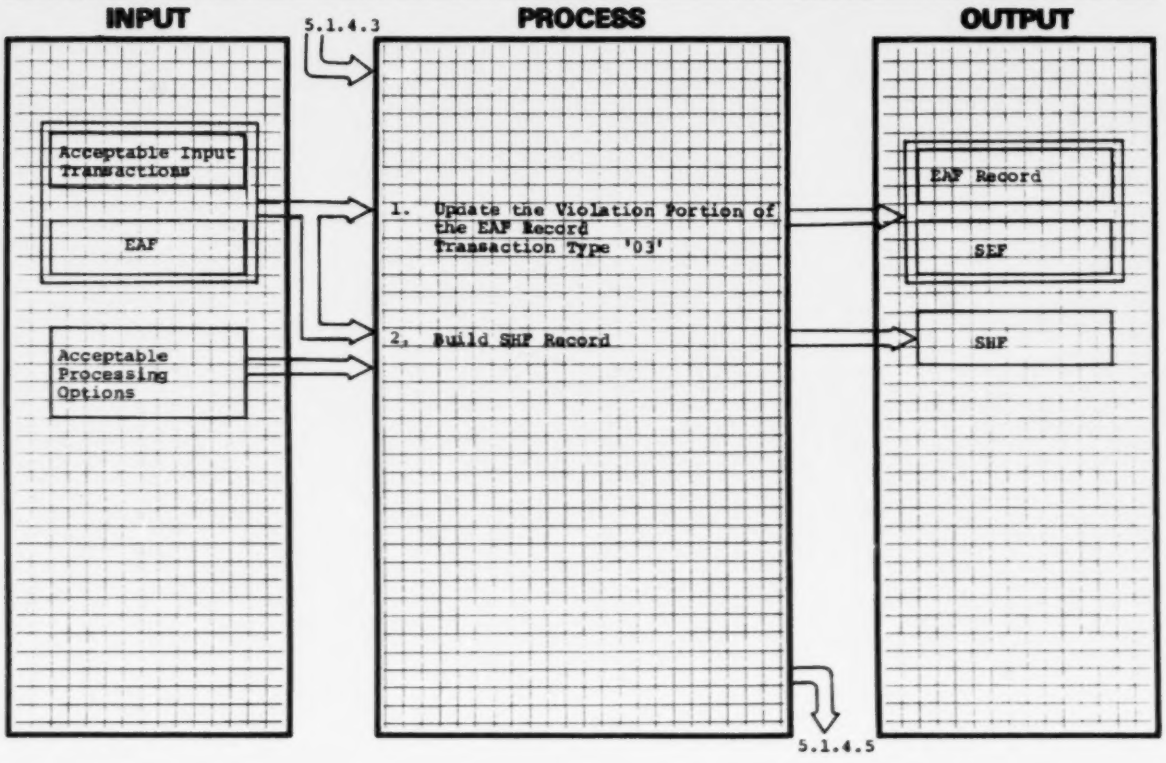
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1
Diagram No.: 5.1.4.3 **Description:** Update Plaintiff-Defendant Portion of EAF Record, Transaction Type '02'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '02' allows entry or updating of the Plaintiff-Defendant portion of the Enforcement Actions File (EAF) Records. Non-blank fields on the acceptable input transactions are used to replace the corresponding data elements on the EAF record. If the Case-ID specified on the transaction is not present on the EAF, the entire transaction is in error and is written to the Standard Error File (SEF).		ENAC010	101 202 206 MSIS. 207
2	Build a Standard History File (SHF) Record for each of the updated elements. (See HIPO 5.1.4.2)		ENAC010	101 202 206 MSIS. 202

MODEL STATE INFORMATION SYSTEM

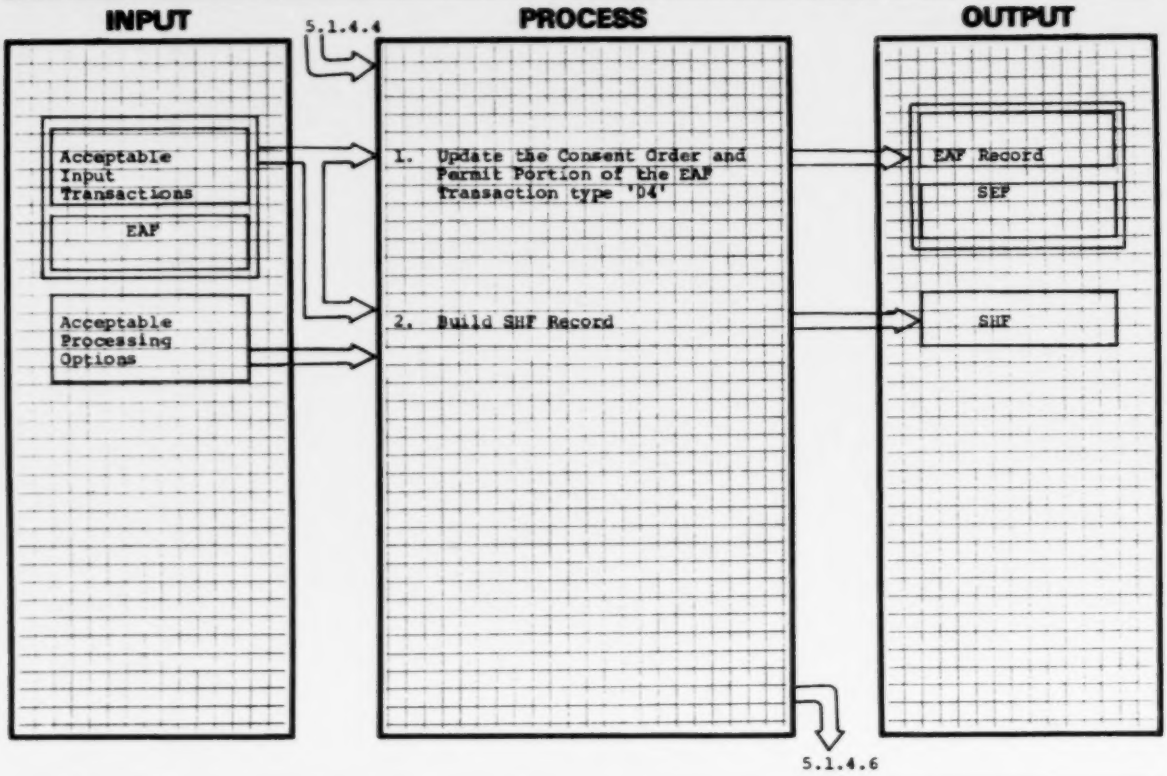
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1
Diagram No.: 5.1.4.4 **Description:** Update Violation Portion of the EAF Record, Transaction Type '03'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '03' allows entry or updating of the Violation Portion of the Enforcement Actions File (EAF) records. Violation Type and Violation Date are used to uniquely identify a violation group. If these fields indicate that a new violation group is to be added, do the following: a. If the new group would be the eleventh violation group for this record, then the transaction is in error and a record is written to the Standard Error File (SEF). b. The violation groups are in sequence by date, so a new violation group will have to be inserted in the EAF record in its proper place. If transaction '03' has 'Y' in position 22, then the violation group is to be deleted. When deleting, the entire violation portion of the EAF record may have to be rearranged, as no imbedded blanks are allowed between violation groups. If transaction '03' is neither a delete nor an add, then replace Contaminant ID with the Contaminant ID on the transaction. If the Case-ID specified on the transaction is not present on the EAF, the transaction is in error and is written to the Standard Error File (SEF).		ENAC010	102 202 207 MSIS. 207
2	Build a Standard History File (SHF) Record for each updated element. (See HIPO 5.1.4.2)		ENAC010	102 202 207 MSIS. 202

MODEL STATE INFORMATION SYSTEM

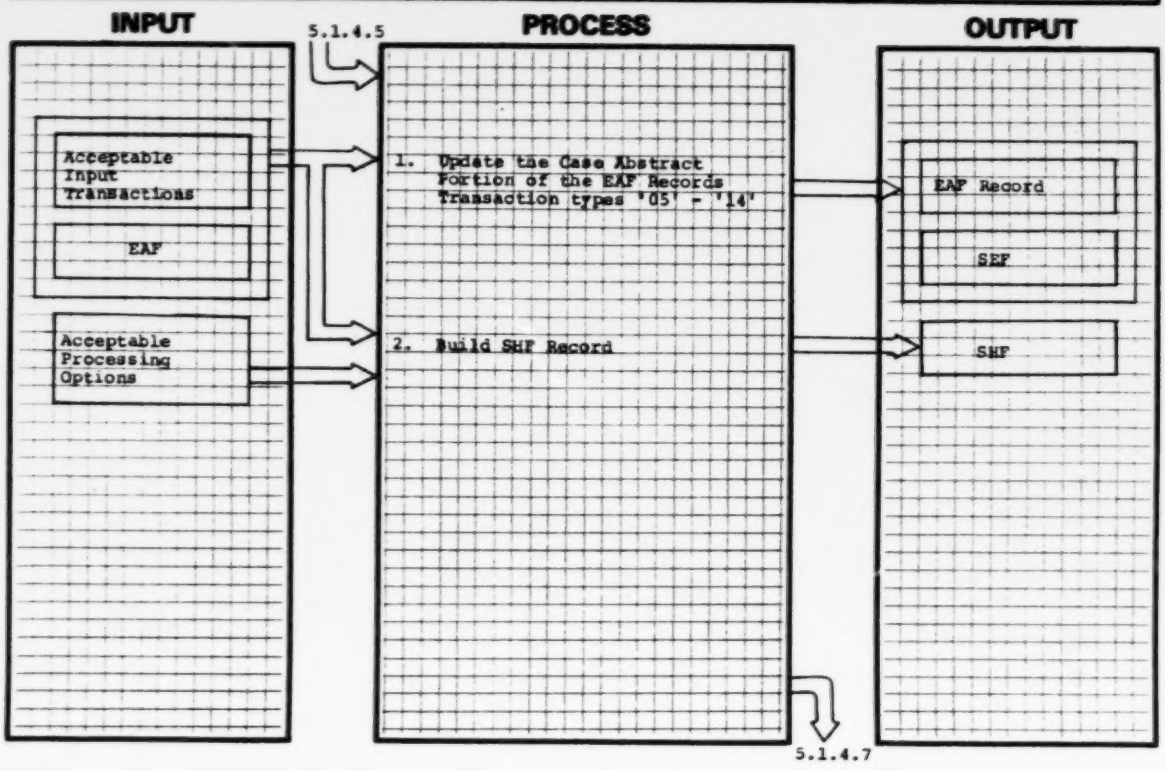
Diagram Type: Detail Subsystem: Enforcement Actions Date: 2/28/77 Page: - of 1
Diagram No.: 5.1.4.5 Description: Update Consent Order - Permit Portion of EAF Record, Transaction Type '04'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '04' allows entry or updating of the Consent Order and Permit Portion of the Enforcement Actions File (EAF) records. Non-blank fields on the acceptable input transactions are used to replace the corresponding data elements on the EAF record. If the Case-ID specified on the transaction is not present on the EAF, the entire transaction is in error and is written to the Standard Error File (SEF).		ENAC010	102 202 208 MSIS. 207
2	Build a Standard History File (SHF) Record for each of the updated elements (See HIPO 5.1.4.2).		ENAC010	102 202 208 MSIS. 202

MODEL STATE INFORMATION SYSTEM

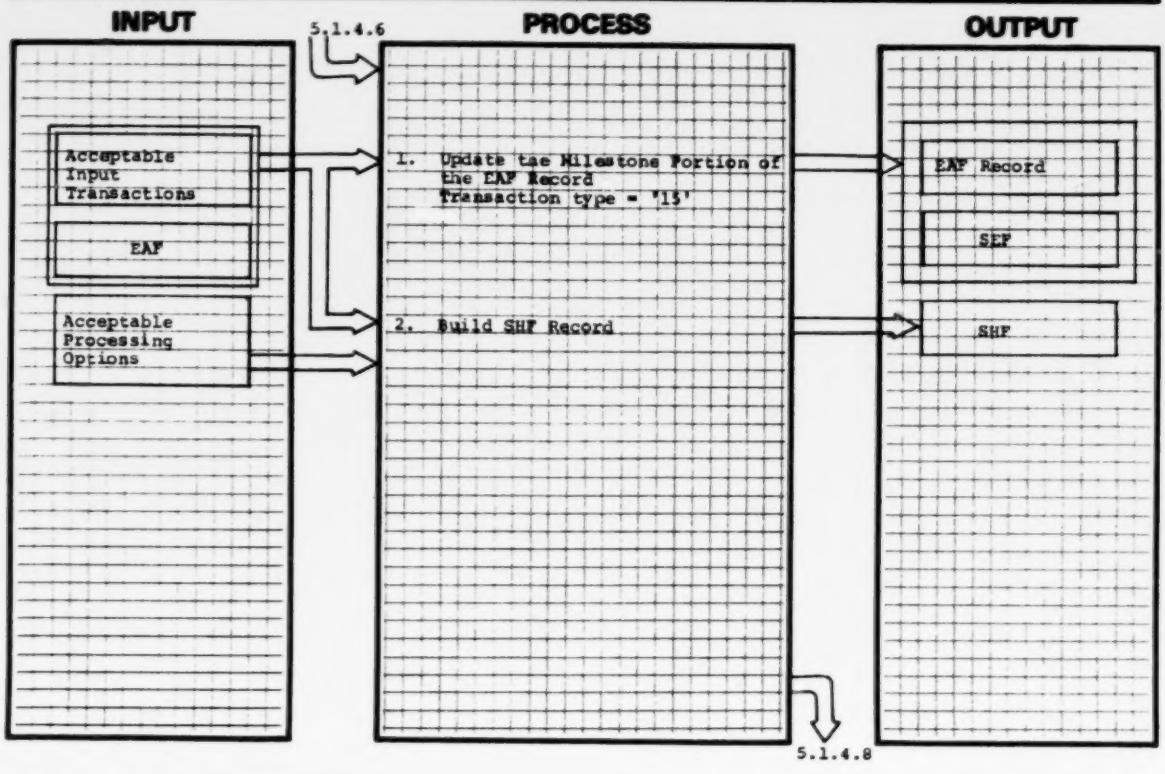
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 **of** 1
Diagram No.: 5.1.4.6 **Description:** Update Case Abstract Portion of EAF Record Transaction Types '05' Through '14'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction codes '05' through '14' allow entry and updating of the Case Abstract Portion of the Enforcement Actions File (EAF) Records. Each transaction contains one line of the abstract. If the Case-ID specified on the transaction is not present on the EAF, the entire transaction is in error and is written to the Standard Error File (SEF).		ENAC010	103 202 209 MSIS. 207
2	Build a Standard History File (SHF) Record for each of the update abstract lines. (See HIPO 5.1.4.2)		ENAC010	103 202 209 MSIS. 202

MODEL STATE INFORMATION SYSTEM

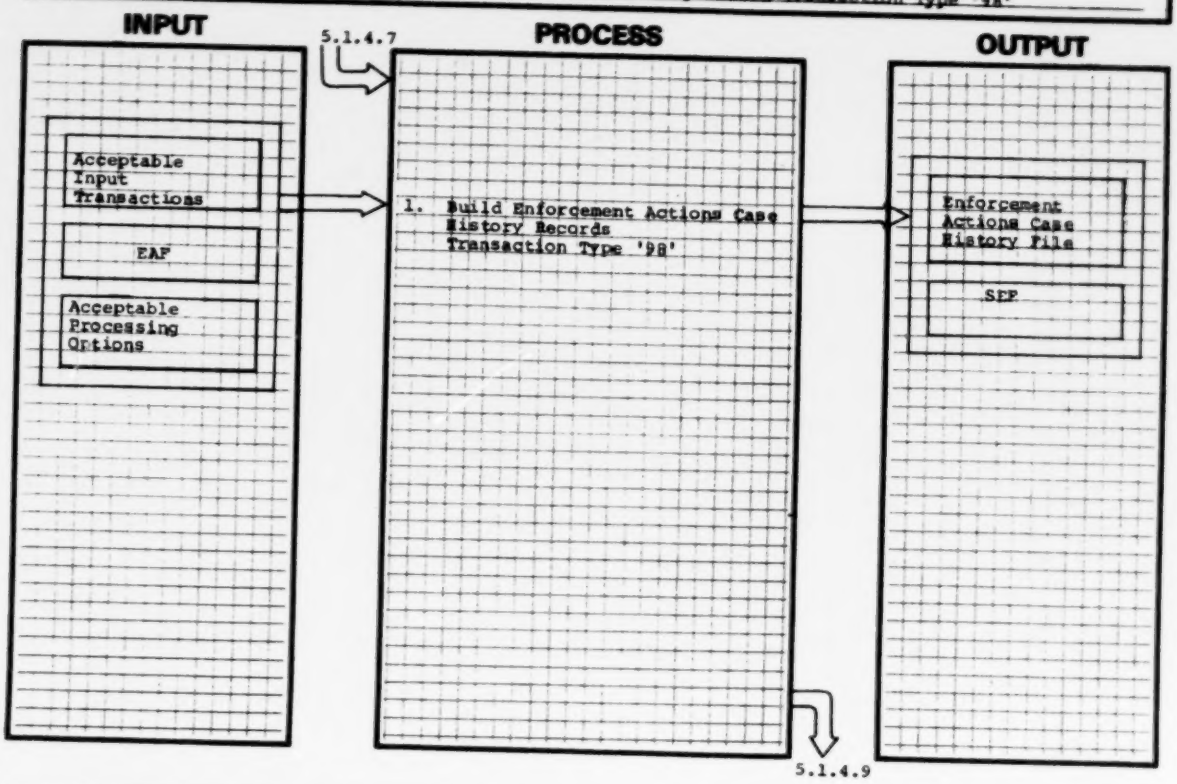
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1
Diagram No.: 5.1.4.7 **Description:** Update Milestone Portion of EAF Record, Transaction Type '15'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '15' allows entry or updating of the Milestone portion of the Enforcement Actions File (EAF) records. Target Date and Milestone Code are used to uniquely identify a milestone group. If these fields indicate that a new milestone group is to be added, do the following: a. If the new group would be the sixteenth milestone for this record, then the transaction is in error and a record is written to the Standard Error File (SEF). b. The Milestone groups are in sequence by Target Date. Maintain this sequence by inserting new milestones into the EAF record in the proper place. If transaction '15' has 'Y' in position 22, then the milestone is to be deleted. When deleting, the entire milestone portion of the EAF Record may have to be rearranged, as no imbedded blanks are allowed between milestone groups. If transaction '15' is neither a delete nor an add, then replace the attained date with the attained date on the transaction. If the Case-ID specified on the transaction is not present on the EAF, the transaction is in error and is written to the Standard Error File (SEF).		ENAC010	104 202 210 MSIS. 207 DED
2	Build a Standard History File (SHF) Record for each updated element. (See HIPO 5.1.4.2)		ENAC010	104 202 210 MSIS. 202

MODEL STATE INFORMATION SYSTEM

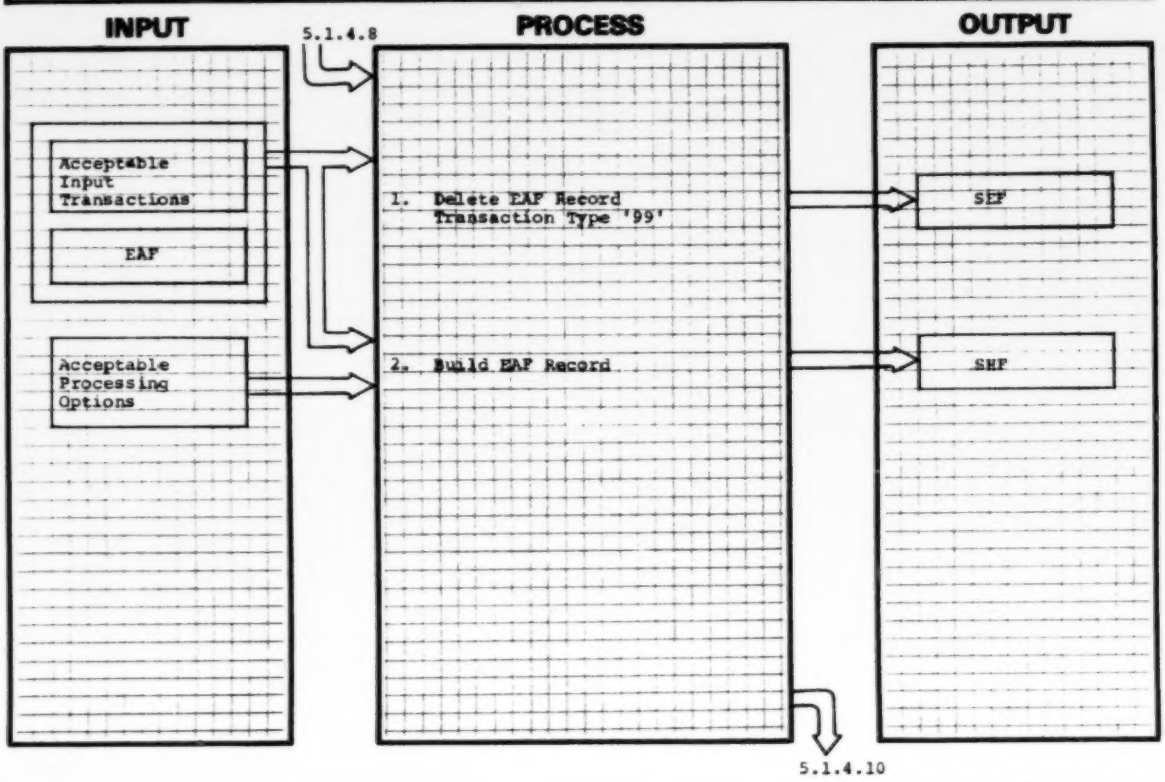
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1
Diagram No.: 5.1.4.8 **Description:** Build Requested Enforcement Actions Case History Record Transaction Type '98'



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction type '98' is used to select an Enforcement Actions File (EAF) record for inclusion in the Enforcement Actions Case History Report. If the Case-ID specified on the transaction is not present on the EAF, the transaction is in error and is written to the Standard Error File (SEF). If the Case-ID is present, then build an Enforcement Actions Case History File Record. If the EAF Record has been modified by any previous transactions, the current date from the Processing Options is used as the last update date for the Enforcement Actions Case History Record. Put '2' in Record Origin and blanks in the Sort Key.		ENAC010	202 203 MSIS. 207 101

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 of 1
Diagram No.: 5.1.4.9 **Description:** Delete EAF Record Transaction Type '99'

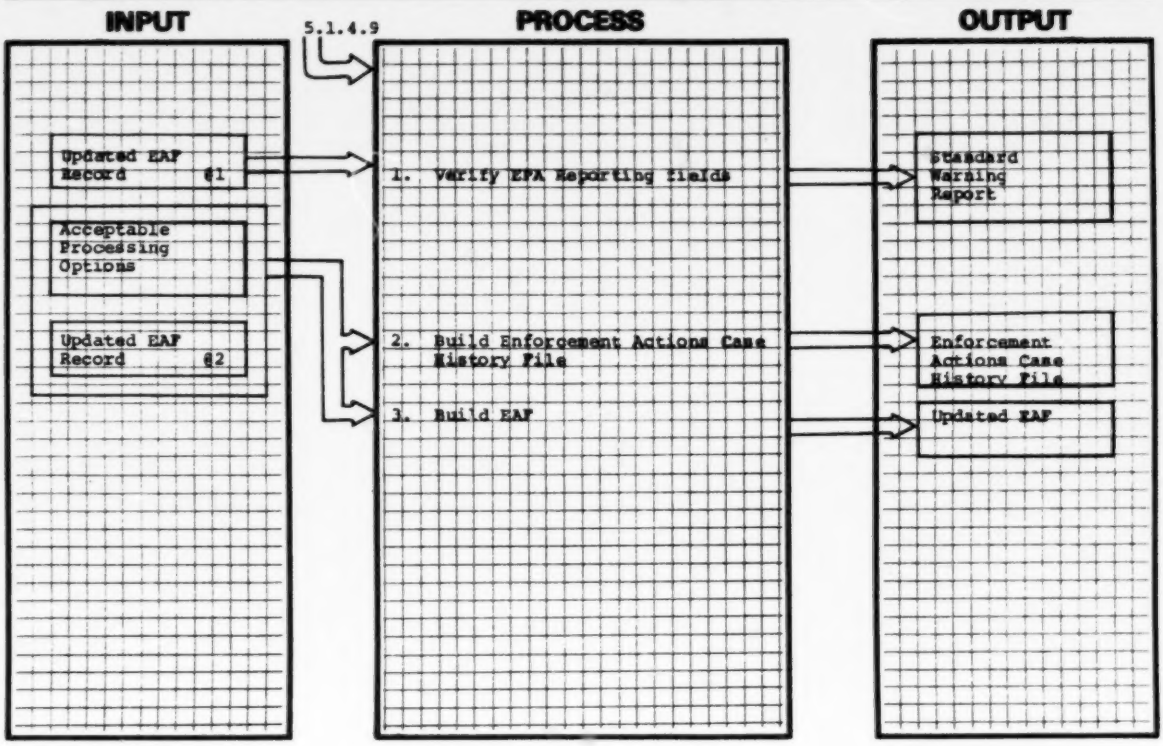


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction type '99' is used to delete records from the Enforcement Actions File (EAF). If the Case-ID specified on the input transaction is not present on the EAF, the transaction is in error and is written to the Standard Error File (SEF). If the Case-ID is found on the EAF and Legal Status Code is not equal to 'Z', the record may not be deleted and an SEF record is written. Otherwise, do not write the EAF record to the new EAF.		ENAC010	202 101 MSIS. 207 DED
2	Build a Standard History File (SHF) Record. Use '999' for the data element code. Use 'RECORD DELETED' for SHF-OLD-VALUE. Use blanks for SHF-NEW-VALUE. Use dates, Record ID, and File ID as normal.		ENAC010	101 202 MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Enforcement Actions Date: 2/28/77 Page: 1 of 1

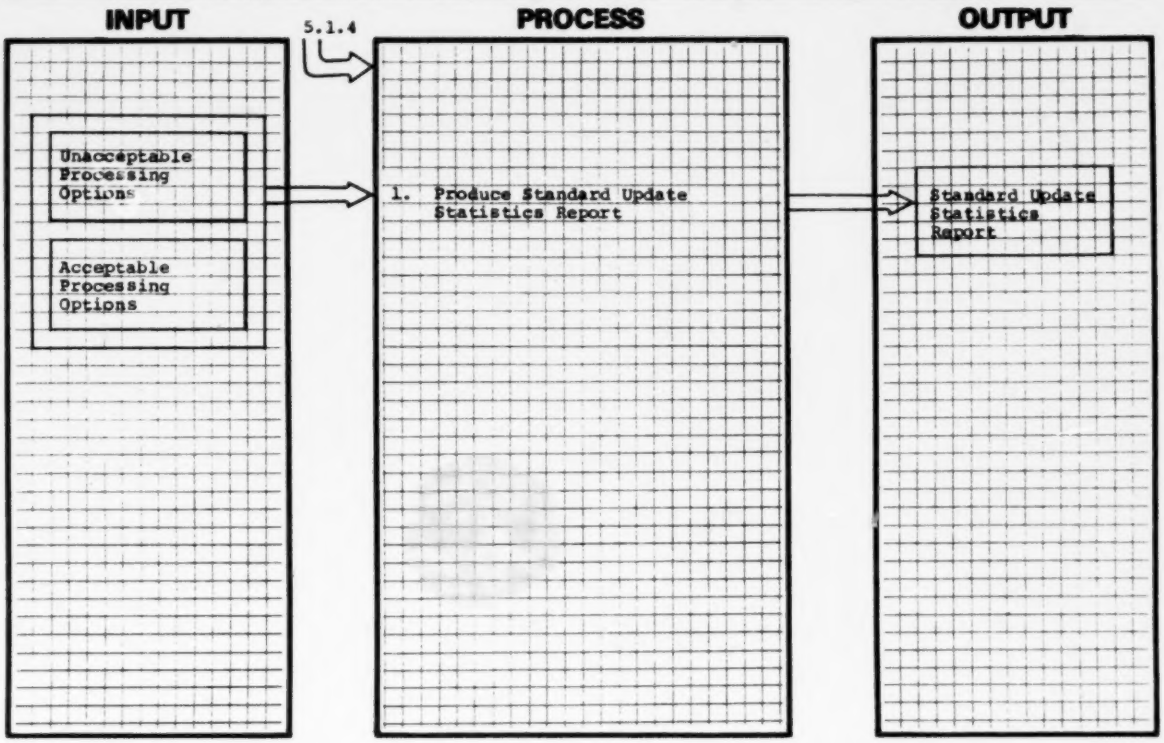
Diagram No.: 5.1.4.10 Description: Verify Updated EAF Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify that those elements necessary for EPA reporting are present if the record was just created using transaction code '00'. For those elements not present, produce a message on the Standard Warning Report.		ENAC010	202 MSIS. 310 DED
2	Set the last update date equal to the current date. If the record was just created with a '00' transaction, build an Enforcement Actions Case History File Record as follows: Use '1' for Record Origin Use blanks for the Sort Key The updated record may now safely be written to the new Enforcement Actions File (EAF).		ENAC010 ENAC010	202 203 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2/28/77 **Page:** 1 **of** 1
Diagram No.: 5.1.5 **Description:** Produce Standard Update Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Update Statistics Report is always produced. The following two formats may be used: a. The Standard Update Statistics Report contains: 1. Totals which were accumulated during the update process: (a) number of records originally on the file (b) number of acceptable transactions (c) number of error records created (d) number of records modified on the file (e) number of new records added to the file (f) number of records deleted from the file (g) number of records currently on the file. 2. Totals (d) through (g) are computed as a percent of (a). b. If any Processing Options records are in error, the record and associated error messages can be produced instead of or in addition to the totals in 1.a.		ENAC010	MSIS. 300 MSIS. 309

NARRATIVE

SUBSYSTEM: Enforcement Actions
PROGRAM NAME: ENAC020
DATE: February 9, 1977

I. OBJECTIVES:

The objective of this program is to search the Enforcement Actions File (EAF) and select specific Enforcement Actions records for the Enforcement Actions Condensed Report and the Enforcement Actions Case History Report based upon given selection criteria.

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Enforcement Actions File	EAF-RECORD	ENAC.202
2.	Data Element Table	DET-RECORD	MSIS.201

B. PROCESSING OPTIONS RECORDS:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options	EAFI-EA20-PROC-RECORD	ENAC.105	ENAC.211
2.	Sort Options	EAFI-SORT-RECORD	ENAC.106	ENAC.212
3.	Selection Form (SEL1)	EAFI-SELECT-1-RECORD	ENAC.107	ENAC.213
4.	Selection Form (SEL2)	EAFI-SELECT-2-RECORD	ENAC.108	ENAC.214

III. OUTPUTS:

A. RECORD LAYOUTS:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Enforcement Actions Case History File	EAFI-CH-PROC-RECORD EAFI-CH-RECORD	ENAC.200 ENAC.203

B. REPORT LAYOUTS:

NAME	EXHIBIT LAYOUT
1. Standard Selection Statistics Report	MSIS.312 MSIS.309

C. TURNAROUND DOCUMENTS:

Not Applicable

IV. FUNCTIONS:

1. Records from the Data Element Table (DET) with the file ID of "EA" are read and used to build an internal DET.

2. The Processing Options records are read and edited. If any errors are detected, then processing is discontinued.

3. Based on mnemonic names and values from the Processing Options "SEL1" records and relational operators from "SEL2" records, Enforcement Actions File (EAF) records are selected for report production.

4. For each record that has been selected, a sort key is constructed using information from the "SORT" processing options record, and a selected EAF report record is built.

5. The Standard Selection Statistics Report is produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

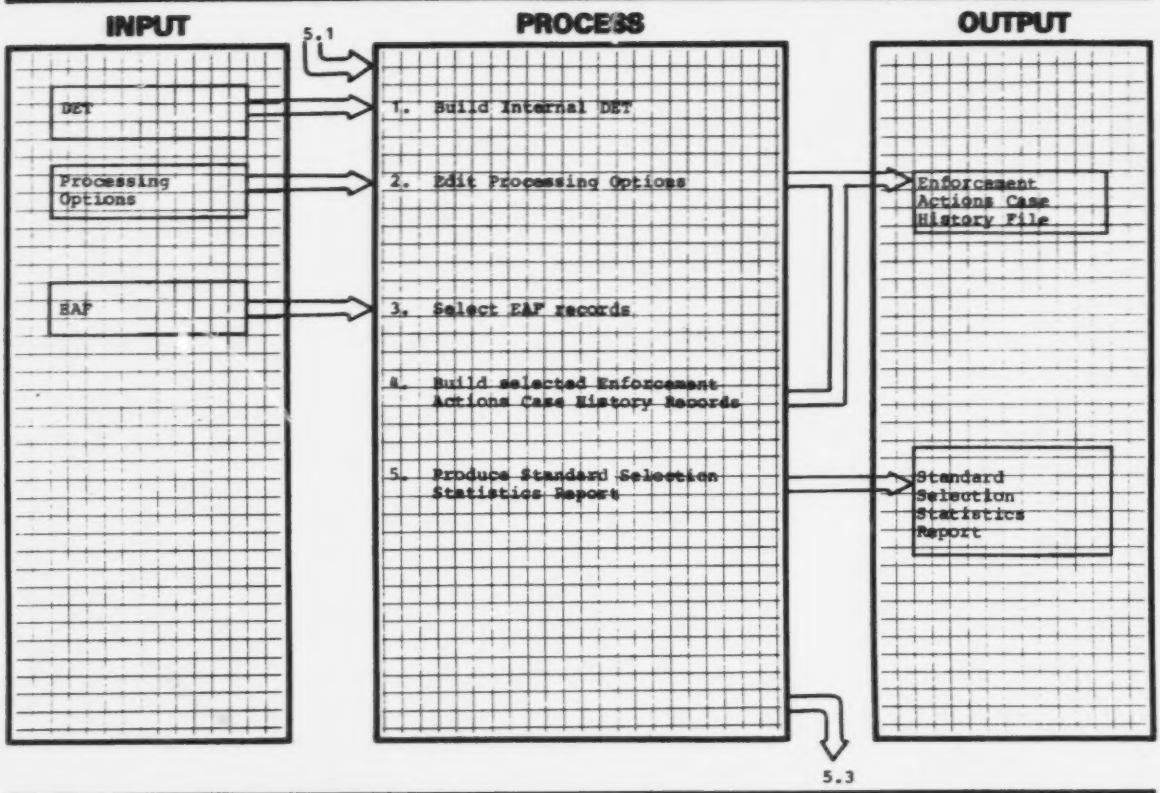
1. Processing Options
2. Sort Options
3. Selection Form--Definition of Data Elements
4. Selection Form--Definition of Logic for Selection

B. Data Element Descriptions

Not Applicable

MODEL STATE INFORMATION SYSTEM

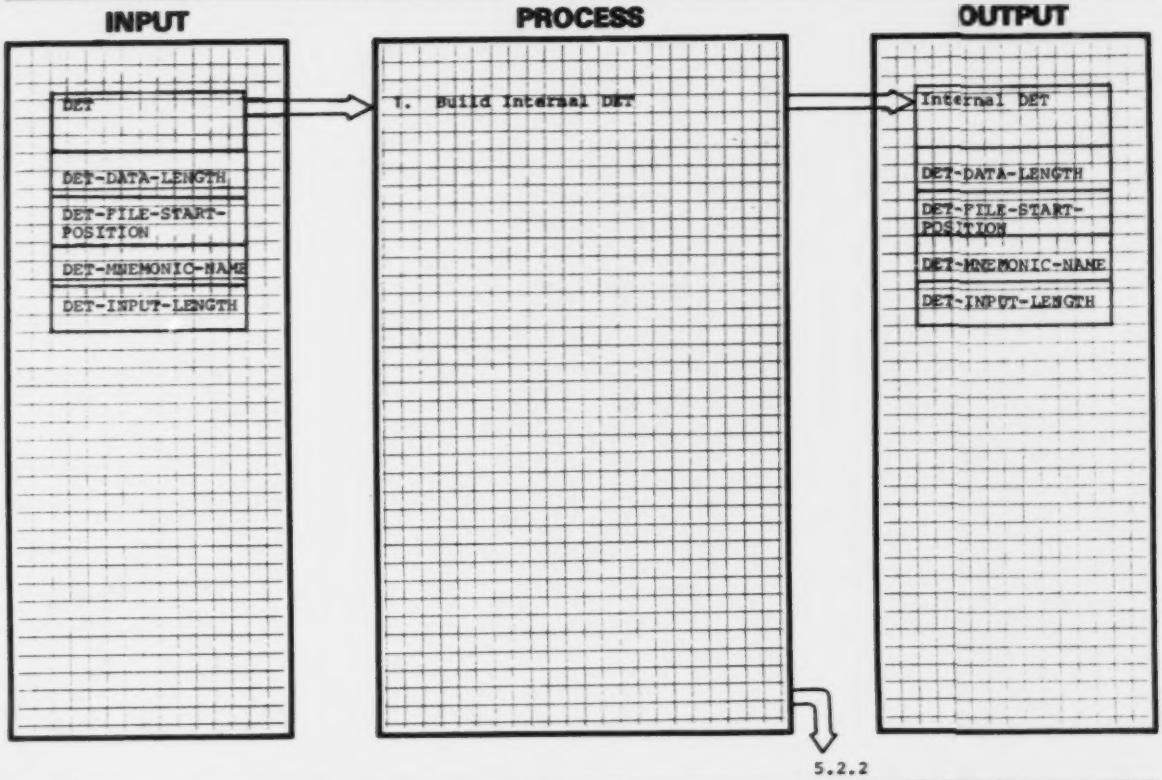
Diagram Type: Overview **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1
Diagram No.: 5.2 **Description:** Select from EAF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an internal Data Element Table (DET).	5.2.1	ENAC020	
2	The Processing Options including 'PROC', 'SEL1', 'SEL2', and 'SORT' Records are edited.	5.2.2	ENAC020	
3	Records are selected from the Enforcement Actions File (EAF) according to the options contained in the 'SEL1' and 'SEL2' records.	5.2.3	ENAC020	
4	If the EAF record was selected, a sort key is built and the record is then written to the Enforcement Actions Case History File for processing by ENAC030 and ENAC040.	5.2.4	ENAC020	
5	The Standard Selection Statistics Report is produced after all EAF records have been checked. This report shows all the selection criteria, the number of records selected and any Processing Options that are in error.	5.2.5	ENAC020	

MODEL STATE INFORMATION SYSTEM

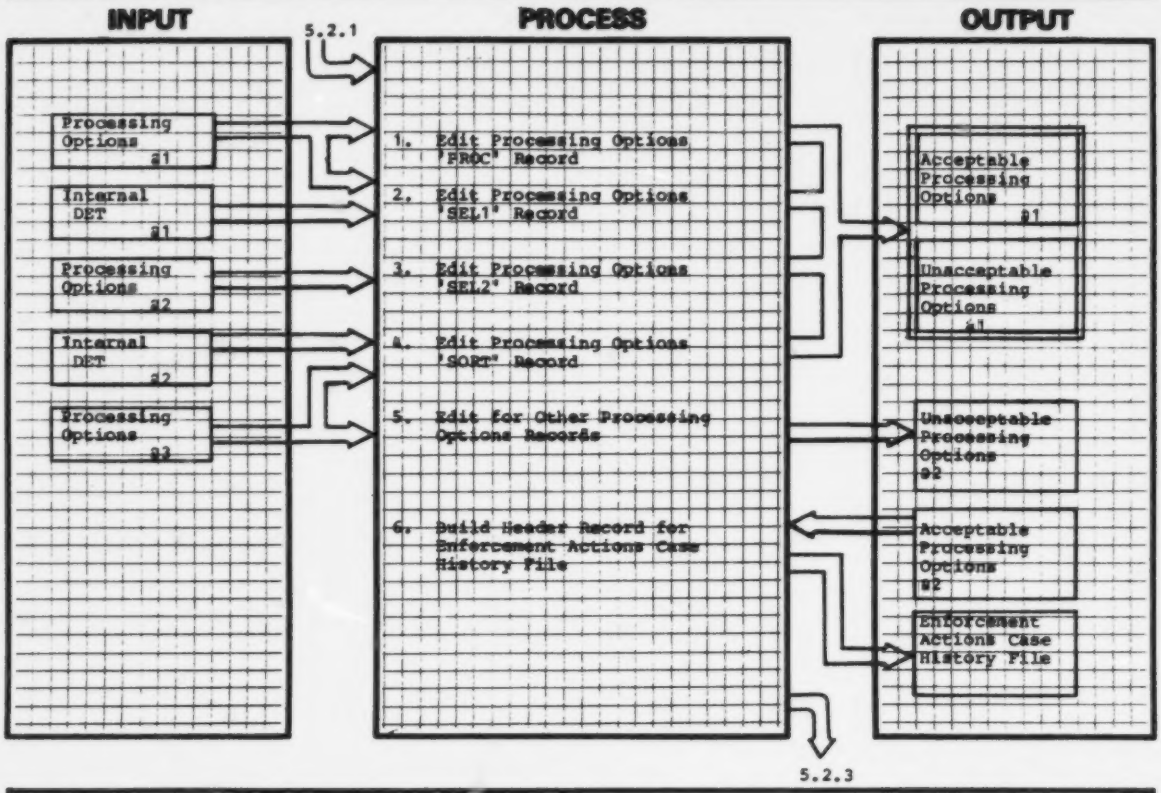
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 **of** 1
Diagram No.: 5.2.1 **Description:** Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built from the DET with all records having a file ID of EA. Only the file start position, data element length, input length, and data element mnemonic are used.		ENAC020	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1
Diagram No.: 5.2.2 **Description:** Edit Processing Options

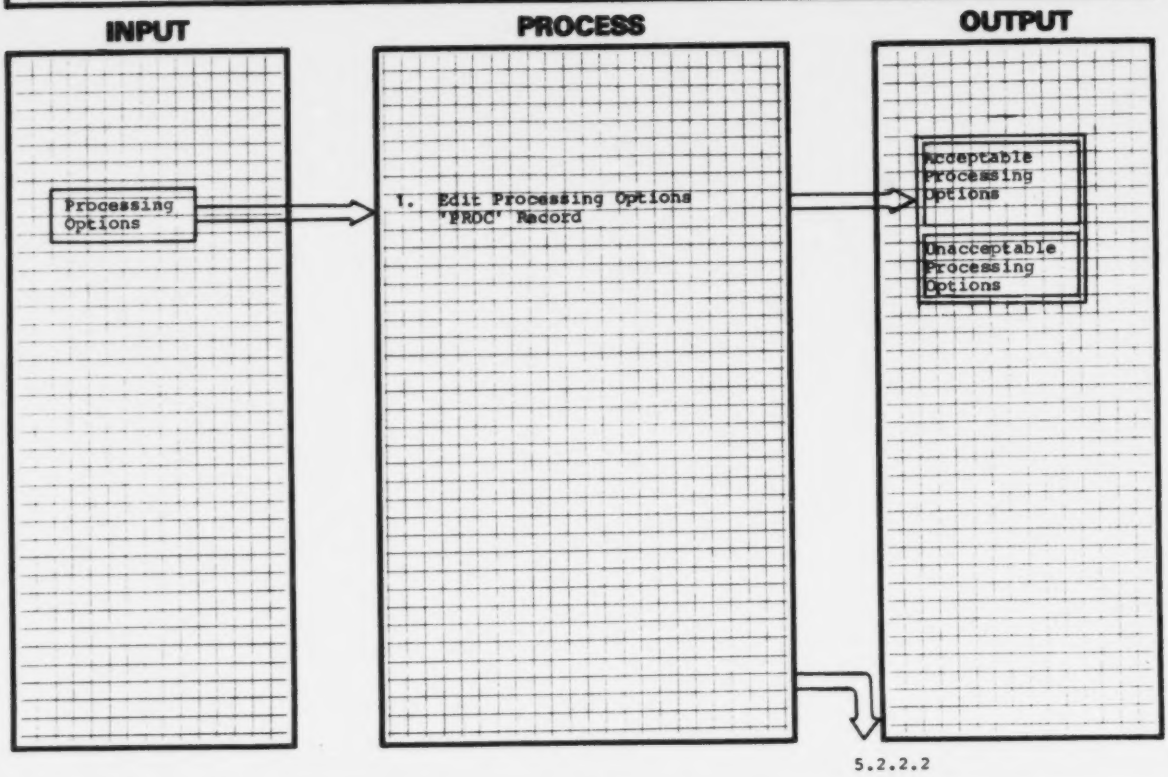


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'PROC' in positions 1-4.	5.2.2.1	ENAC020	
2	Edit the Processing Options record with 'SEL1' in positions 1-4.	5.2.2.2	ENAC020	
3	Edit the Processing Options record with 'SEL2' in positions 1-4.	5.2.2.3	ENAC020	
4	Edit the Processing Options record with 'SORT' in positions 1-4.	5.2.2.4	ENAC020	
5	Edit records with other than the above four keywords in positions 1-4.	5.2.2.5	ENAC020	
6	Build the header record for the Enforcement Actions Case History File.	5.2.2.6	ENAC020	
	NOTE: Any Processing Options in error are printed on the Standard Selection Statistics Report.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 **of** 1

Diagram No.: 5.2.2.1 **Description:** Edit Processing Options 'PROC' Record

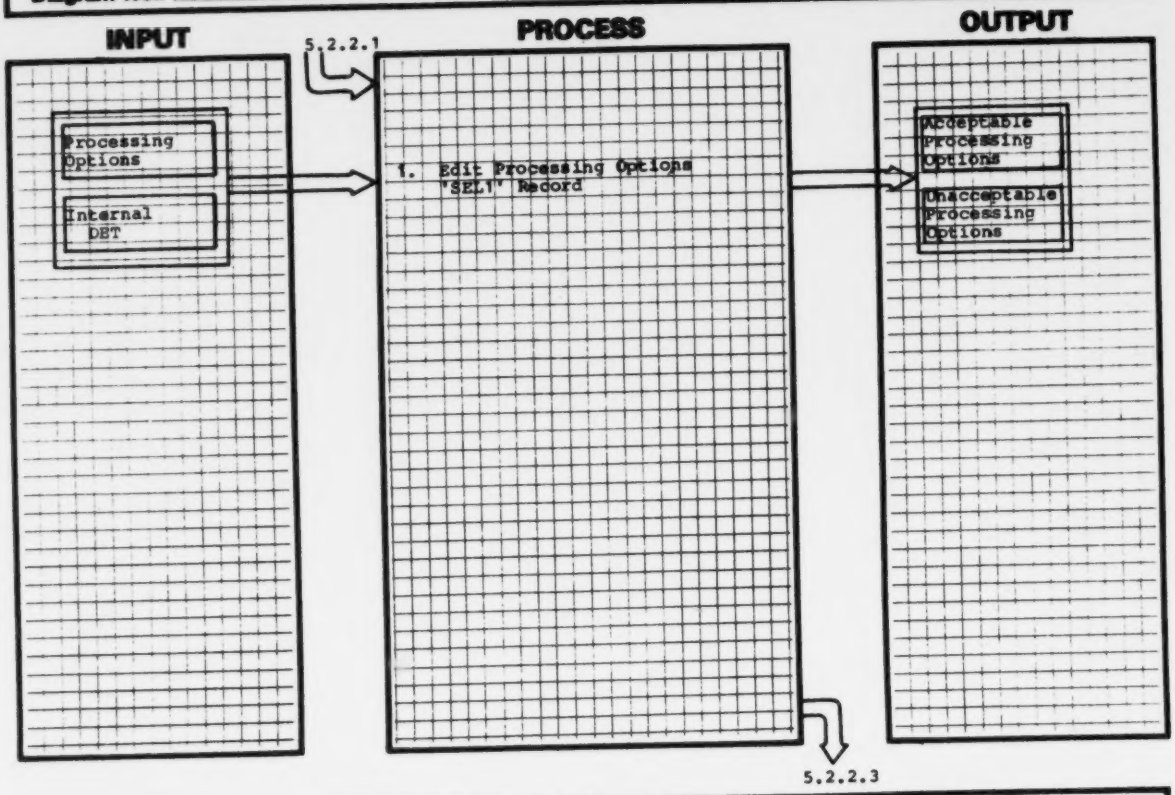


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'PROC' in positions 1-4 of the record as follows: a. the current date must be a valid date-if not, default to a blank string. b. the Condensed Report production option must be a "Y" or "N" - if it is not, default to a "N". c. the Case History production option must be a "Y" or "N" - if it is not, default to a "N". If no 'PROC' record exists, if more than one 'PROC' record exists, or if both Report Options are "N", processing should be terminated. NOTE: If any defaults are taken, warning messages are written on the Standard Selection Statistics Report.		ENAC020	105 211

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1

Diagram No.: 5.2.2.2 **Description:** Edit Processing Options 'SEL1' Record

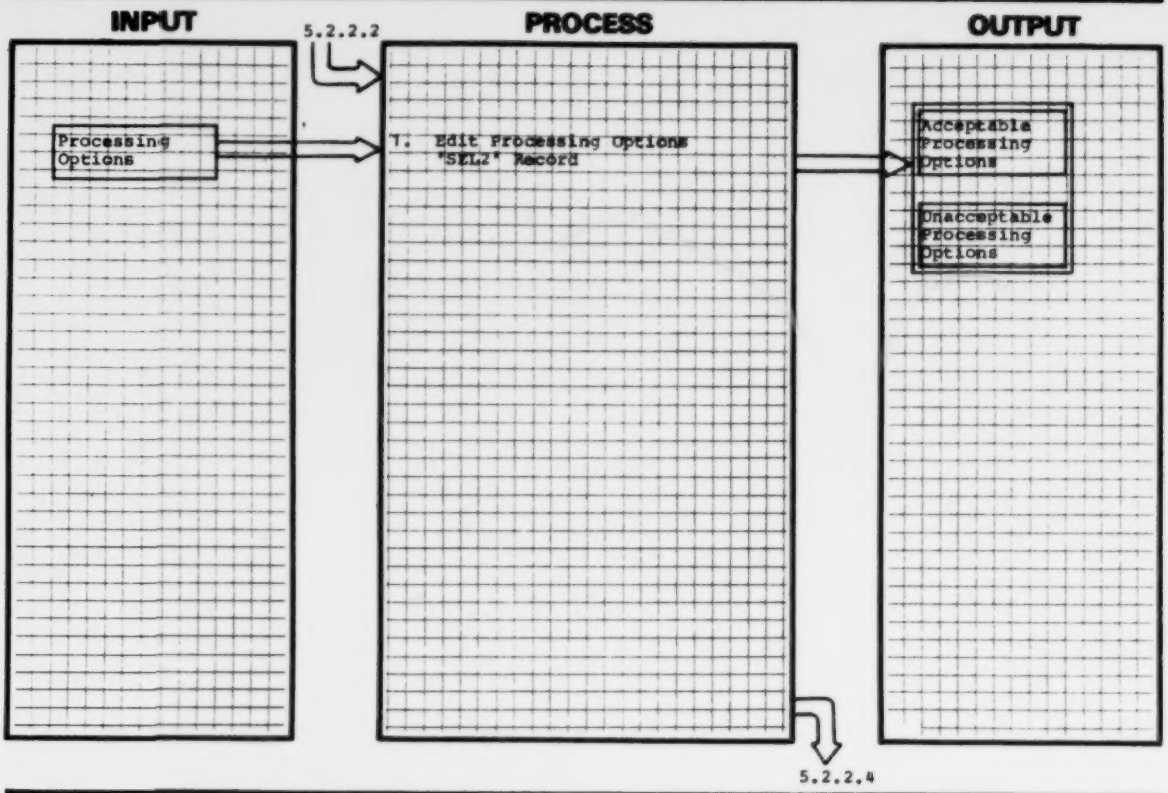


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL1' in positions 1-4 of the records as follows: a. EAFI-SELECT-1-MNEMONIC, positions 5-14, must equal one of the mnemonic names on the record layout for the Enforcement Actions File (EAF). This edit is hard coded into the program. b. EAFI-SELECT-1-DE-VALUE, positions 15-29, must have blanks in positions (DET-INPUT-LENGTH plus 15) to 29 where DET-INPUT-LENGTH is the length of a data element associated with the mnemonic name matched in 1.a. above. Positions 15 to (DET-INPUT-LENGTH plus 14) must be either numeric or alpha-numeric as specified by the Data Element Dictionary (DED) for that particular data element. Additionally, if the data element is a date, it is checked for validity and then converted to Julian for comparison purposes. c. EAFI-SELECT-1-DE-NO, positions 30-31, must be a number from 01 to 35 and must be a different number from all other 'SEL1' records. If there are no 'SEL1' records or if an error exists on any 'SEL1' record, then the record is in error and will be written on the Standard Selection Statistics Report. Appropriate error messages for the 'SEL1' Processing Options record may be found by referencing the Error Code Instructions. If any errors exist, processing will be terminated.		ENAC020	107 213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1

Diagram No.: 5.2.2.3 **Description:** Edit Processing Options 'SEL2' Record

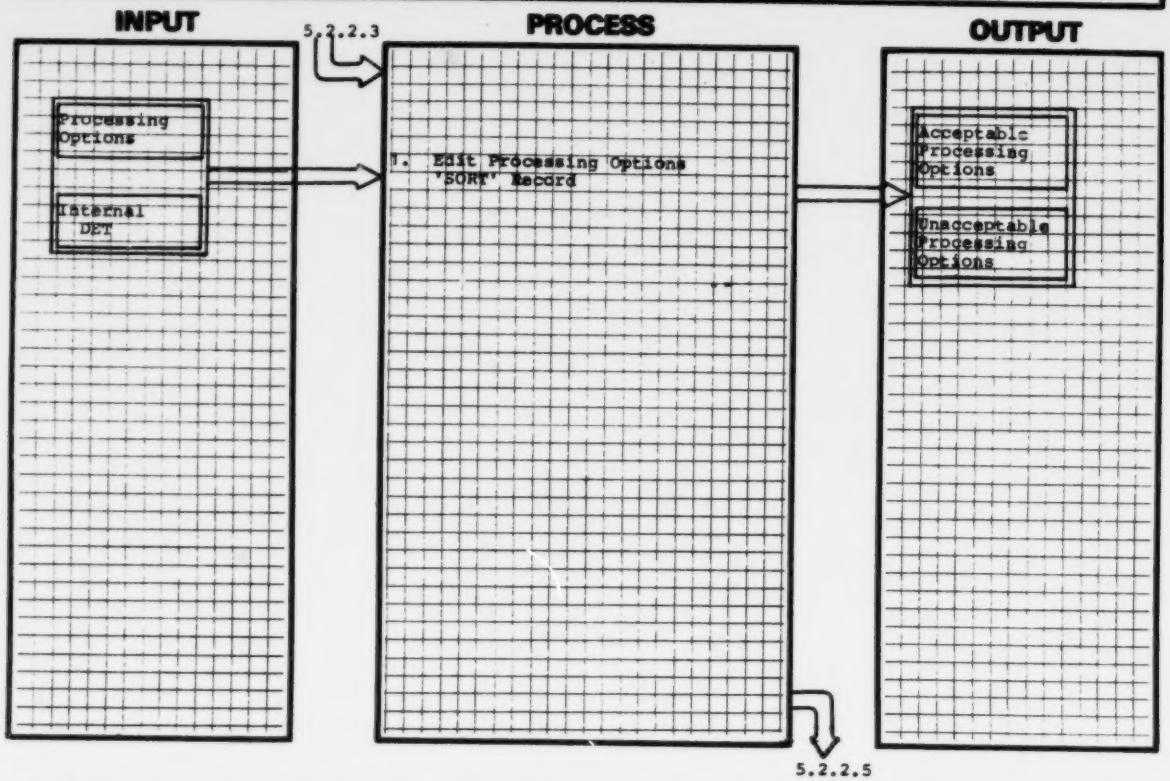


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL2' in positions 1-4 of the records as follows: a. Each non-blank EAFI-SELECT-2-SYMBOL must have a corresponding 'SEL1' record, determined by EAFI-SELECT-1-DE-NO being equal to the array position of the EAFI-SELECT-2-SYMBOL being edited. In addition, the EAFI-SELECT-2-SYMBOL must equal one of the following operational symbols: LT = less than EQ = equal to GT = greater than NL = not less than NG = not greater than NX = does not exist blank NOTE: If there are more than 35 'SEL2' records, if no 'SEL2' record exists, or if an error exists on a 'SEL2' record, then the record is in error and will be written on the Standard Selection Statistics Report. If any errors exist, processing will be terminated.		ENAC020	108 214 213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1

Diagram No.: 5.2.2.4 **Description:** Edit Processing Options 'SORT' Record

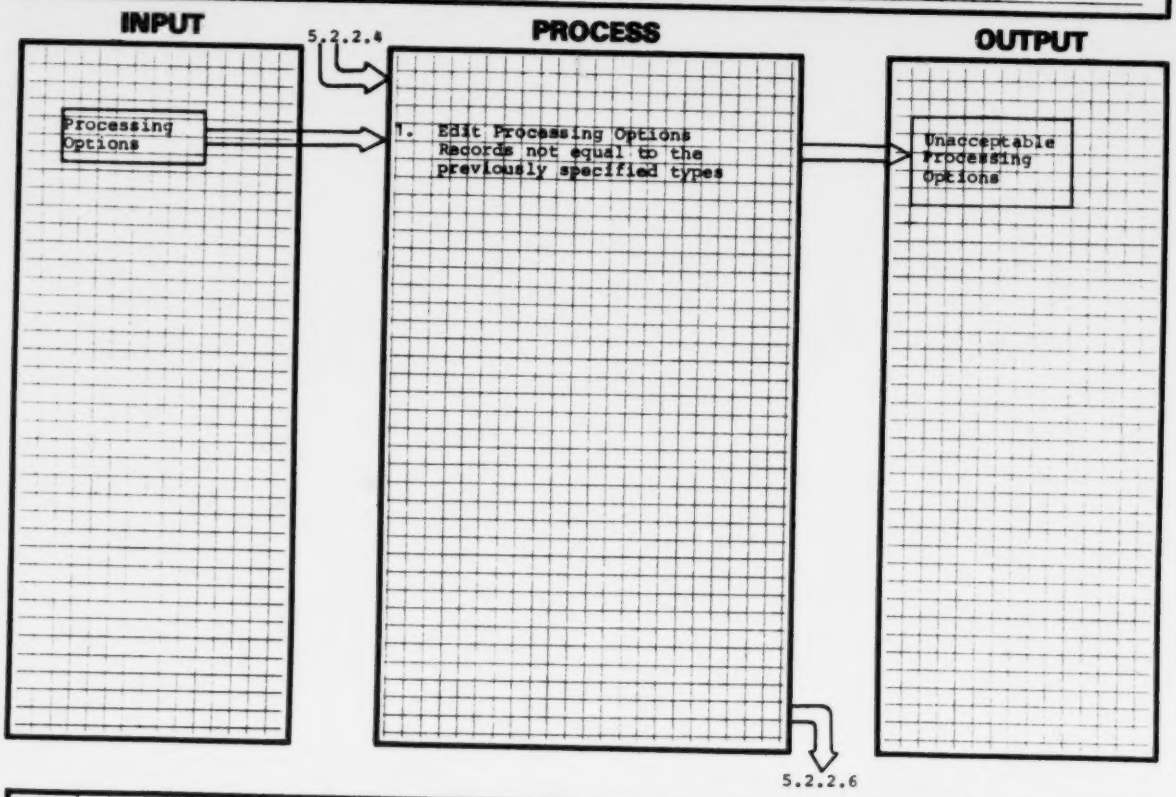


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. EAFI-SORT-SEQUENCE determines the sequence in which the sort key is built. If must be numeric or blank. If numeric, the EAFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, EAFI-SORT-MNEMONIC and EAFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. EAFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the EAFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If EAFI-SORT-SEQUENCE is non-blank, then EAFI-SORT-MNEMONIC must be present. c. EAFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If EAFI-SORT-SEQUENCE is non-blank, then EAFI-SORT-MODE must be present. As each EAFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Selection Statistics Report and processing will be terminated.		ENAC020	106 212

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1

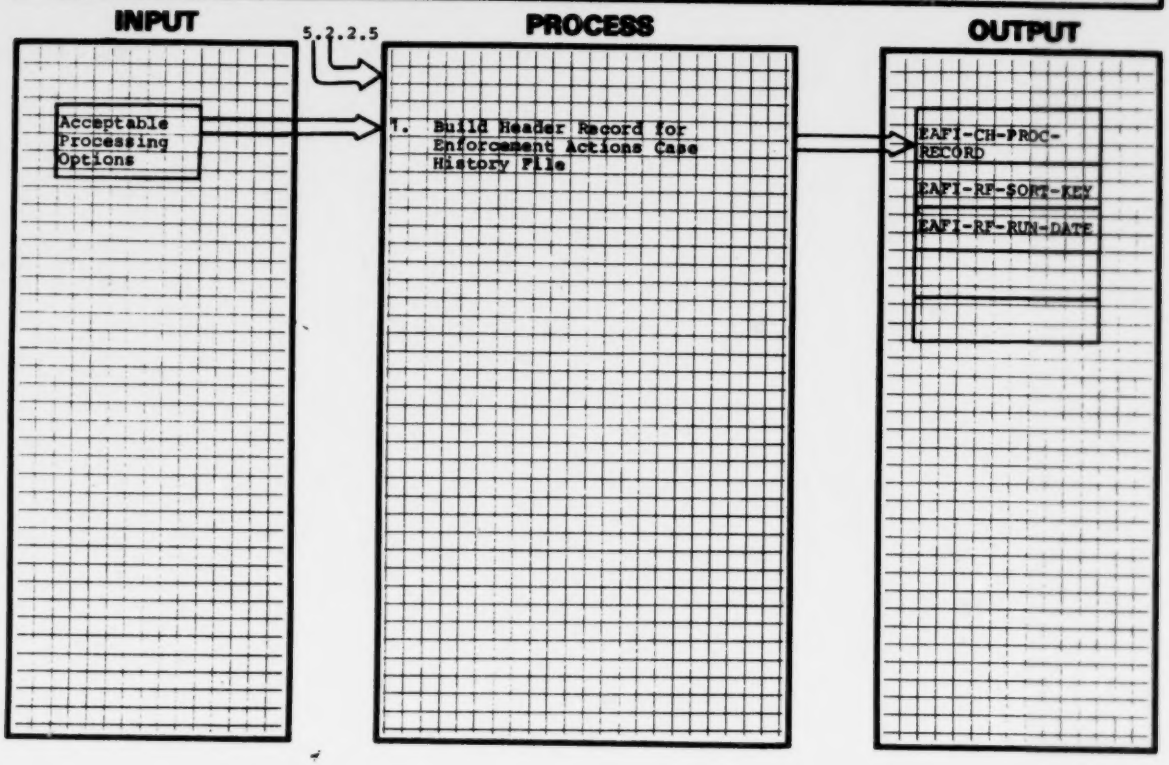
Diagram No.: 5.2.2.5 **Description:** Edit for Other Processing Options Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit all other Processing Options records. All of these records are in error and processing should be terminated.		ENAC020	

MODEL STATE INFORMATION SYSTEM

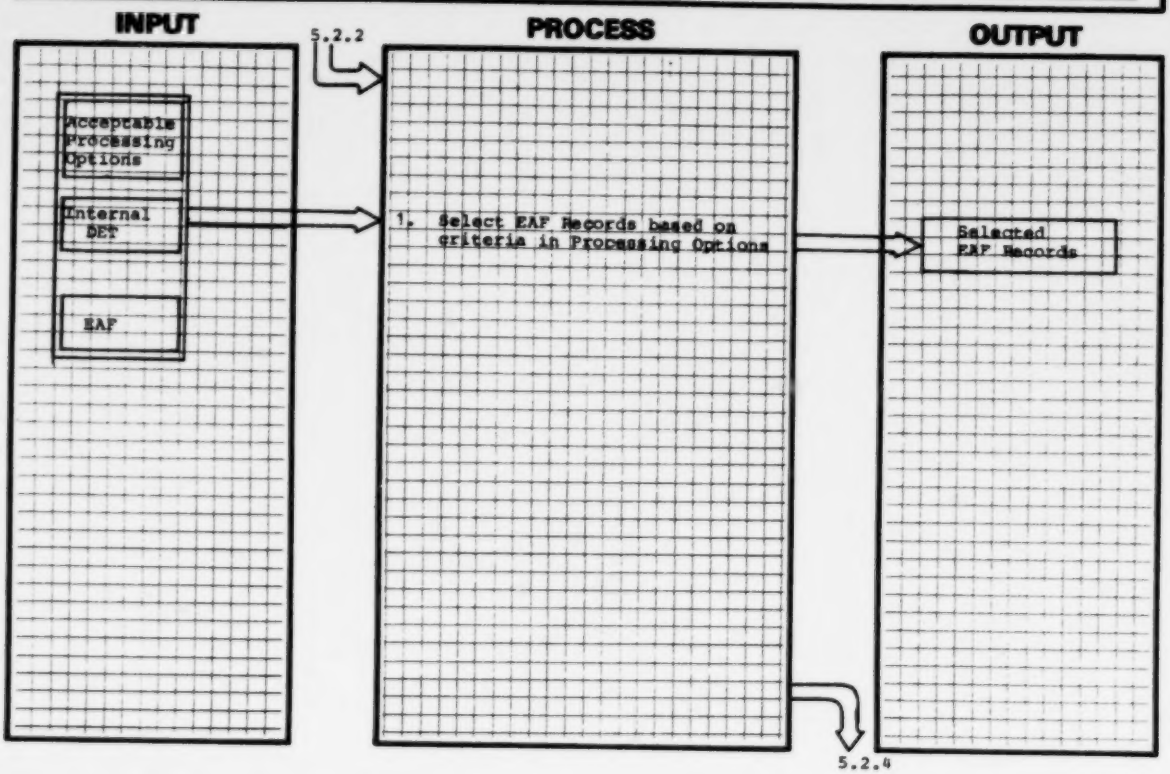
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1
Diagram No.: 5.2.2.6 **Description:** Build Header Record for ENAC Case History File



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build the Header Record for the Enforcement Actions Case History File. Use 'LOW-VALUES' for the sort key, the date from the Processing Options for the current date and the accepted report production flags or their default values if they were incorrectly specified. If processing is to be terminated due to errors in the processing options, both report production flags should be set to 'N' and the Enforcement Actions Case History File should be closed.		ENAC020	200

MODEL STATE INFORMATION SYSTEM

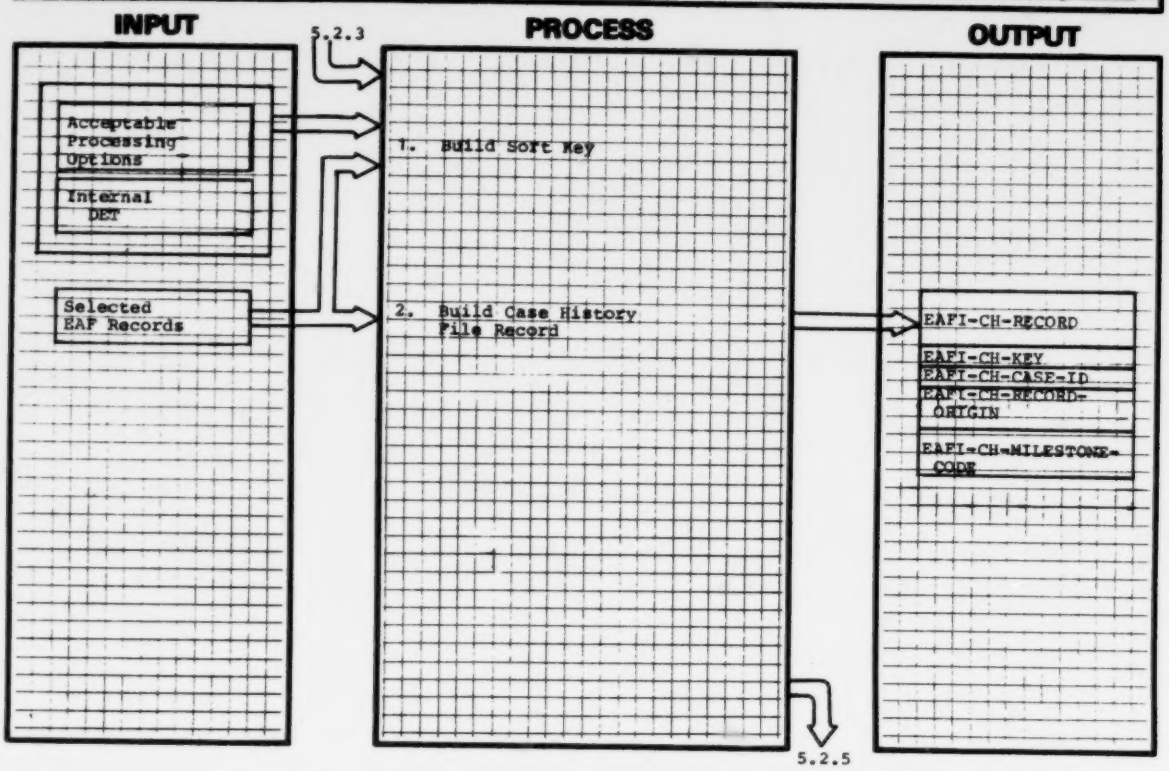
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1
Diagram No.: 5.2.3 **Description:** Select EAF Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Read an Enforcement Actions File (EAF) record. For each mnemonic name, EAFI-SELECT-1-MNEMONIC specified on the 'SEL1' records, obtain the corresponding data element value from the EAF record. If the EAFI-SELECT-1-MNEMONIC references a decimal number, construct a 15 position alphanumeric field from the numeric position and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 If the EAFI-SELECT-1-MNEMONIC represents a value with multiple occurrances (maintained in an array) all such values must be obtained. If the EAFI-SELECT-1-MNEMONIC represents a value with a length greater than 15, only obtain the first fifteen positions of the value. Using those values obtained from the EAF record, examine the logic established in each 'SEL2' record to determine if the EAF record should be selected. If the Nth EAFI-SELECT-1-DE-VALUE, from the 35 position array of a 'SEL2' record is non-blank, then compare the appropriate value from a 'SEL1' record (EAFI-SELECT-1-DE-VALUE, where EAFI-SELECT-1-DE-NO = N) with the corresponding value (same mnemonic name) obtained from the EAF record. The comparison between these two values is made according to the Nth operational symbol (see HIPO 5.2.2.2). If there is no unique corresponding value (values exist in an array), then each value in the array must be compared until one satisfies the conditions of the comparison. If the EAF record meets all the above criteria, then the EAF record is selected. Each EAF record is processed using all 'SEL2' records so that the selection counts are properly maintained.		ENAC020	202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 2
Diagram No.: 5.2.4 **Description:** Build Selected Enforcement Actions Case History Records



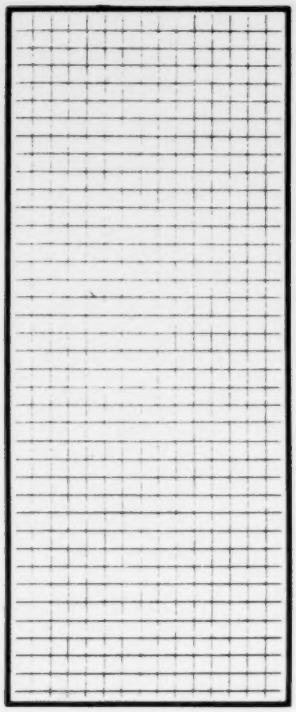
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each selected Enforcement Actions File (EAF) record based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire non-variable portion of the record as an array of one character values. b. Match the EAFI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the EAF. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the EAF. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 (2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows:		ENAC020	202 203

MODEL STATE INFORMATION SYSTEM

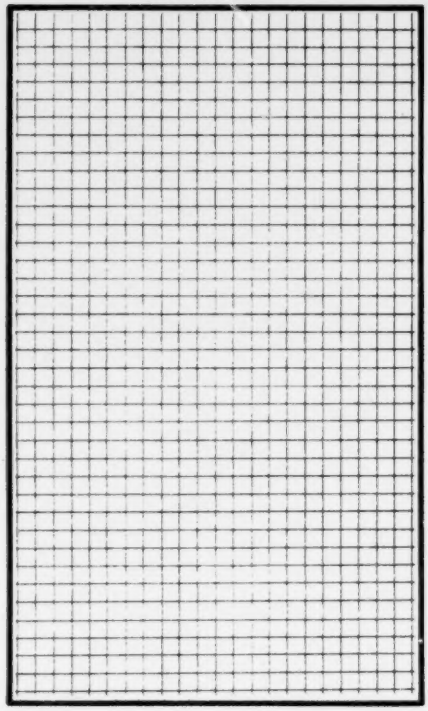
Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 2 **of** 2

Diagram No.: 5.2.4 **Description:** Build Selected EAF Report Records

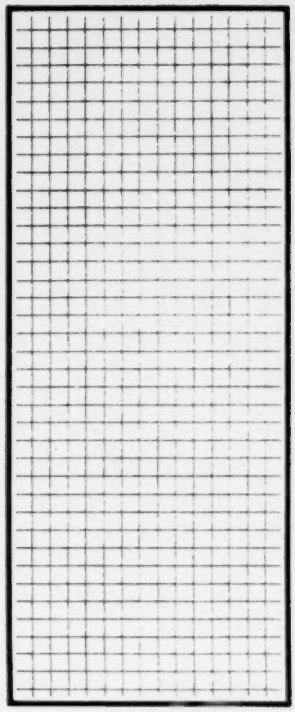
INPUT



PROCESS



OUTPUT

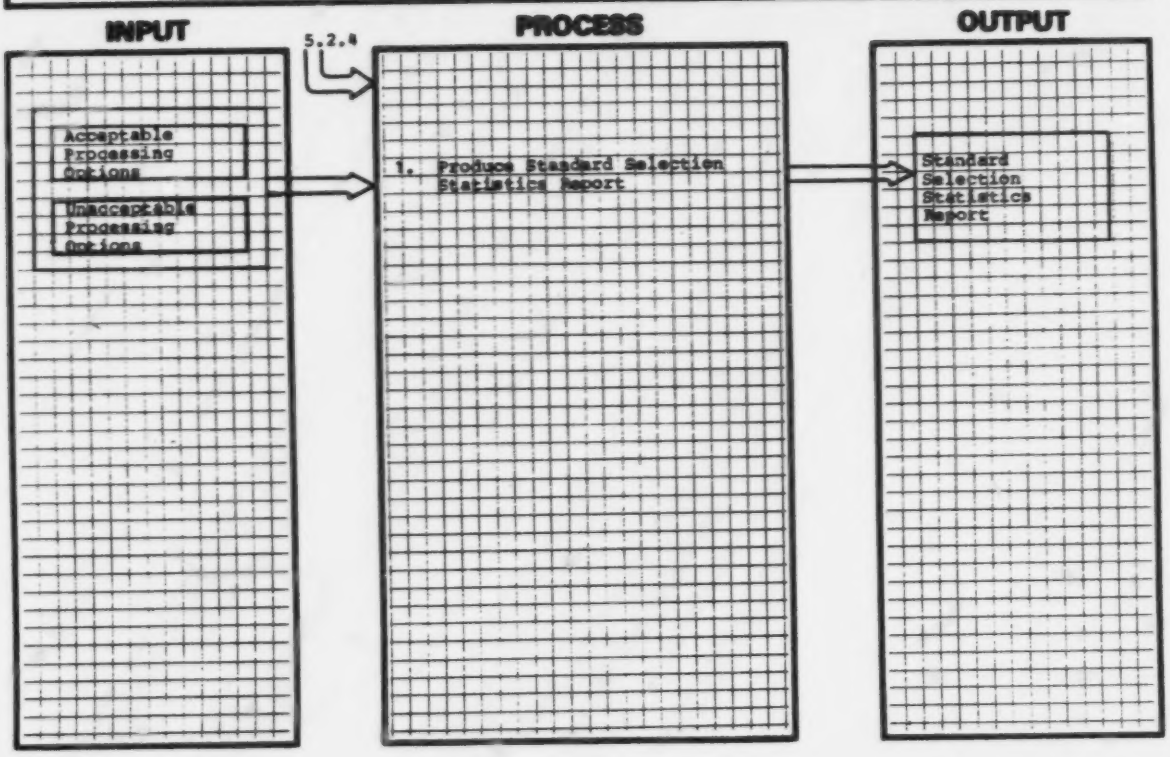


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(a) If the EAFI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the EAFI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the EAFI-SORT-MODE = "A" (ascending) move the value obtained in c. to the proper location in the sort key. If the EAFI-SORT-MODE = "D" (descending) redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the EAFI-SORT-SEQUENCE. NOTE: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions			
2	Selected EAF Records are combined with the sort key to produce Enforcement Actions Case History records. The record origin field in the Case History Record should always be "2".		ENAC020	202 203

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Enforcement Actions Date: 2-8-77 Page: 1 of 1

Diagram No.: 5.2.5 Description: Produce Standard Selection Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		INPO	PROGRAM	OTHER
1	The Standard Selection Statistics Report is always produced. The following two formats may be used: a. The Standard Selection Statistics Report contains: (1) the sort sequence mnemonics (2) the sort mode (3) the selection criteria (4) the total records selected under each selection criteria (5) the total of all records selected for the report (6) the percent of the file selected. b. If any Processing Options records are in error, the records and associated error messages are produced instead of or in addition to the information in a.		ENAC020	MSIS 312 MSIS 309

NARRATIVE

SUBSYSTEM: Enforcement Actions
PROGRAM NAME: ENAC030
DATE: 2-7-77

I. OBJECTIVES:

The objective of this program is to produce the Enforcement Actions Case History Report.

II. INPUTS:

A. Record Forms and Layouts:

NAME	RECORD NAME	EXHIBIT LAYOUT
1. Enforcement Actions Case History File	EAFI-CH-RECORD	ENAC.203
	EAFI-CH-PROC-RECORD	ENAC.200
2. Code Value Table	CVT-RECORD	MSIS.206
3. Public Water Table	PWT-RECORD	PWSI.201
	PWT-HEADER-RECORD	PWSI.234

B. Processing Options Records:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

NAME	EXHIBIT LAYOUT
1. Enforcement Actions Case History Report	ENAC.300

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. The header record of the Enforcement Actions Case History File is read and verified. If position 4 is not equal to "Y" then processing is terminated.

2. The Code Value Table (CVT) is read and an internal CVT is built. This internal CVT is used to translate data element codes to data element descriptions.

3. The Enforcement Actions Case History Report is produced using detail records from the Enforcement Actions Case History File, the internal CVT, and the Public Water Table (PWT).

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

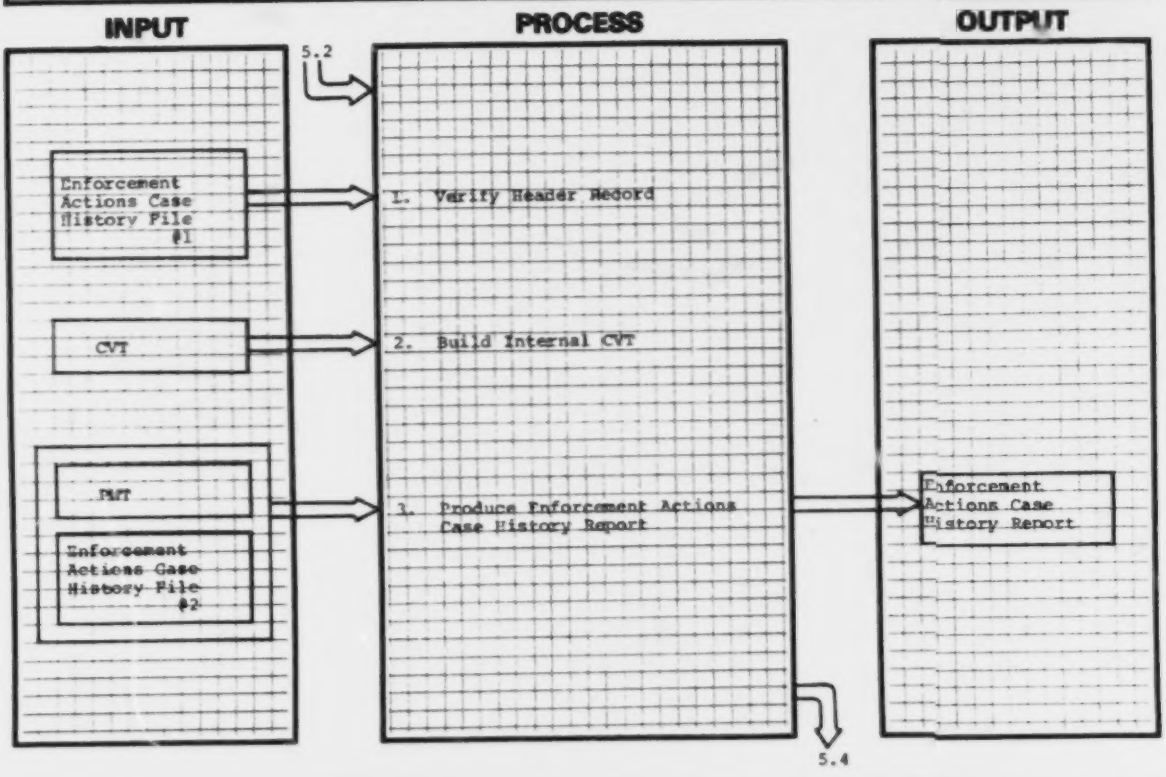
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1

Diagram No.: 5.3 **Description:** Produce Enforcement Actions Case History Report

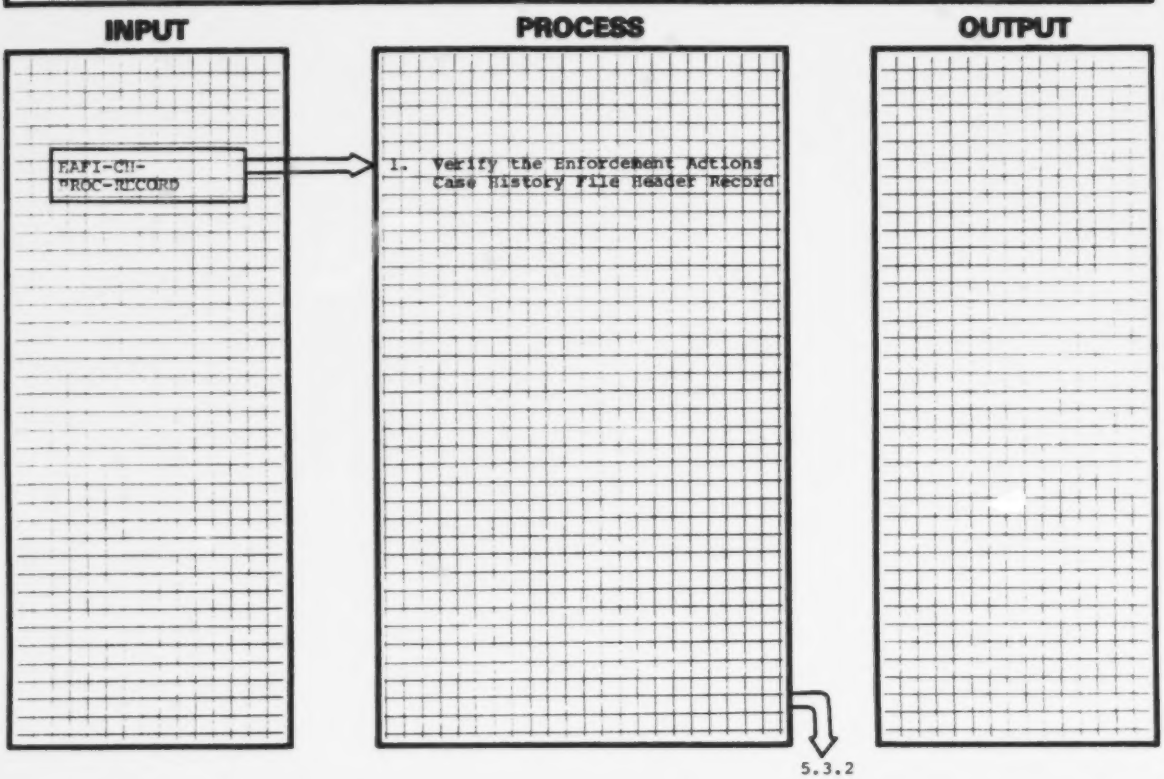


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Verify the header record of the Enforcement Actions Case History File.	5.3.1	ENAC030	
2	Build an Internal Code Value Table (CVT).	5.3.2	ENAC030	
3	Produce the Enforcement Actions Case History Report using the Public Water Table (PWT) and detail records from the Enforcement Actions Case History File. NOTE: The Enforcement Actions Case History File is externally sorted into sort key sequence prior to processing. If this file was created by ENAC020 then the file will be externally sorted on the sort key determined by the user in the processing options 'SORT' records. If this file was created in ENAC010 then the sequence will be CASE ID and REASON.	5.3.3	ENAC030	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 **of** 1

Diagram No.: 5.3.1 **Description:** Verify Header Record

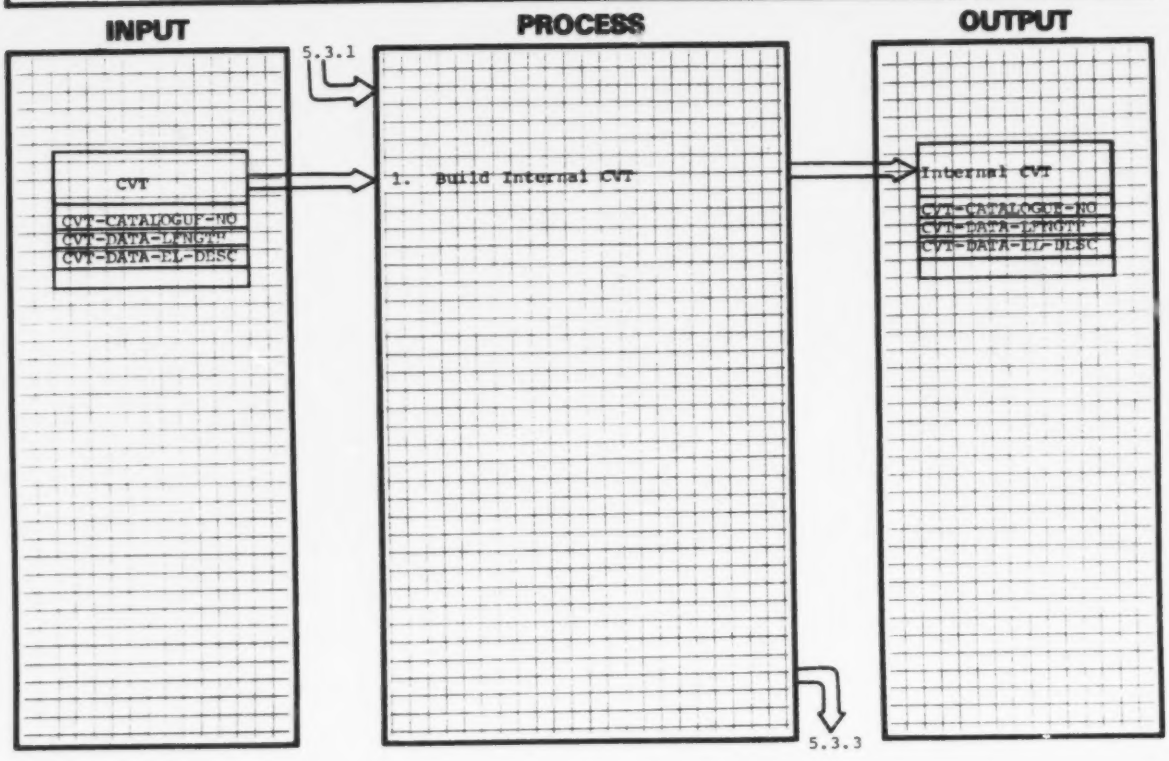


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record from the Enforcement Actions Case History File is read and verified. Verification requirements are: a. Position 4 should equal "Y" b. Positions 6-36 should equal low values. If either of these conditions are not met, then processing is terminated. Move the date field in positions 37-42 to the date field in the report header.		ENAC030	200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 **of** 1

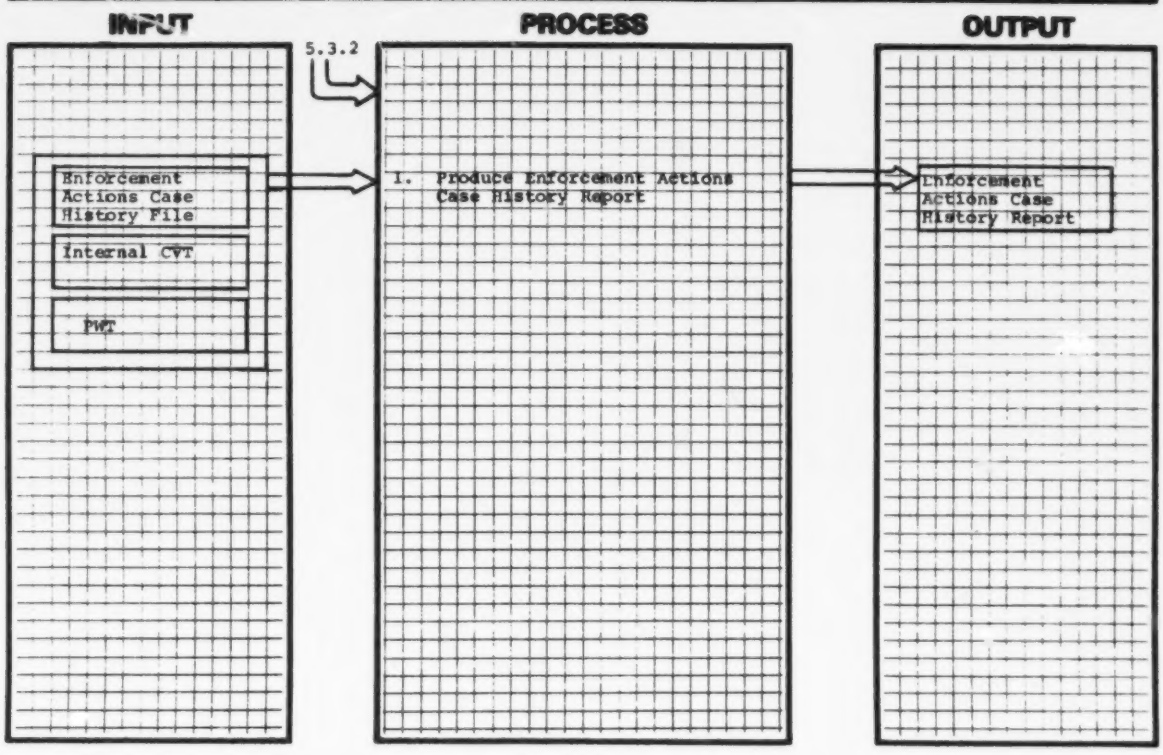
Diagram No.: 5.3.2 **Description:** Build Internal CVT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of data element values and descriptions. Appropriate values and descriptions are stored internally for later use as translation criteria. The data element values and descriptions are contained in two external CVT files. One has records that pertain only to the Enforcement Actions File (EAF). From this CVT obtain those CVT records for translating legal status, defendant type, plaintiff type and milestone code. The other CVT file has records that pertain to common data elements. From this CVT obtain all records for translating violation type.		FNAC030	MSIS. 206 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 **of** 1
Diagram No.: 5.3.3 **Description:** Produce Enforcement Actions Case History Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce the Enforcement Actions Case History Report as follows: a. Obtain Public Water System (PWS) Name from the Public Water Table (PWT). b. Use the Internal Code Value Table (CVT) to translate violation type, milestone code, legal status, plaintiff type and defendant type from codes to 30 character descriptions. c. Convert the following date fields from Julian format to calendar format: Action date Date of last update Violation date Consent date Permit date Milestone target date Milestone attained date d. Convert EAPI-RECORD-ORIGIN as follows: "1" = "NEW RECORD" "2" = "SELECTED RECORD" This field goes into the output report under the heading - REASON FOR REPORTING. e. Convert EAPI-CH-CLOSE-OPEN-INDIC as follows: "1" = "OPEN" "2" = "CLOSED" This field goes into the output report under the heading - CASE STATUS. f. Only one case will appear on a page.		ENAC030	203 300 PWSI. 201 PWSI. 234 DED

NARRATIVE

SUBSYSTEM: Enforcement Actions
PROGRAM NAME: ENAC040
DATE: 1-24-77

I. OBJECTIVES:

The objective of this program is to produce the Enforcement Actions Condensed Report.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Enforcement Actions Case History File	EAFI-CH-RECORD EAFI-CH-PROC-RECORD	ENAC.203 ENAC.200

B. Processing Options Records:

Not Applicable

III. OUTPUTS:

A. Record Layouts:

Not Applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Enforcement Actions Condensed Report	ENAC.301

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. The header record on the Enforcement Actions Case History File is verified.

2. The Enforcement Actions Condensed Report is produced. This report will appear in the sequence designated in the sort options of the Enforcement Actions Selection program (ENAC020).

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not Applicable

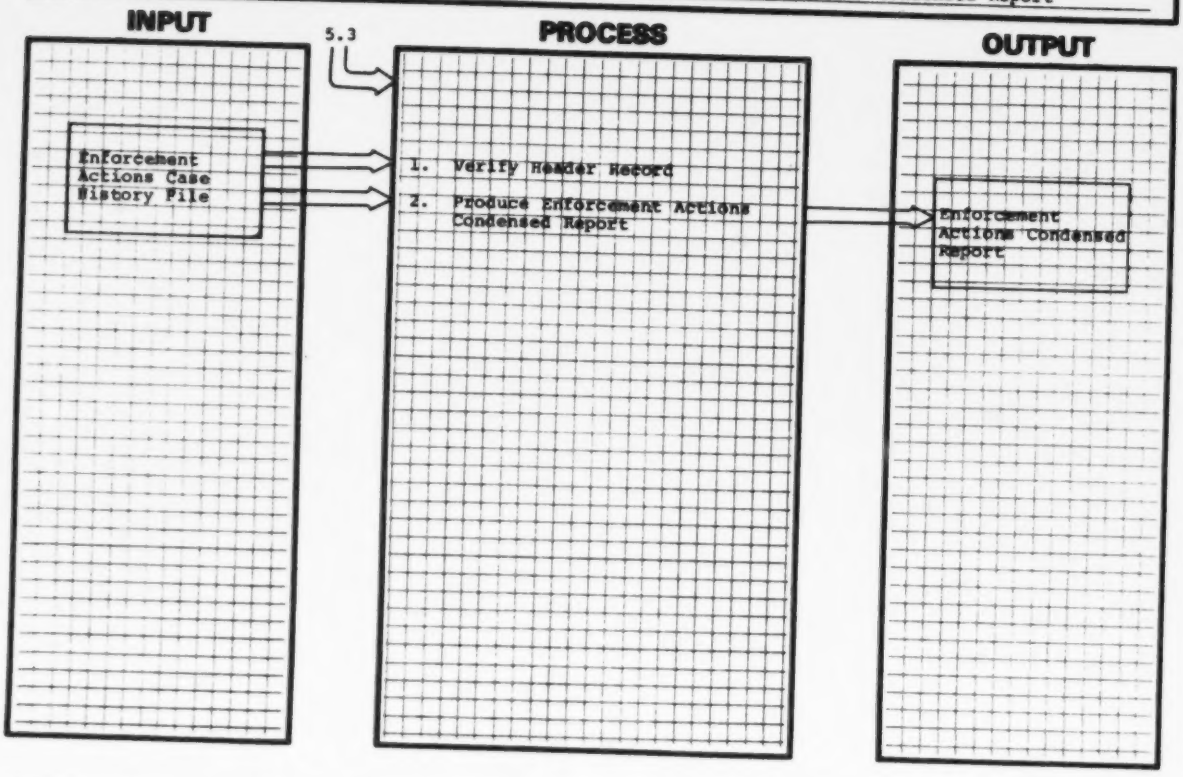
B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Enforcement Actions Date: 2-8-77 Page: 1 of 1

Diagram No.: 5.4 Description: Produce Enforcement Actions Condensed Report

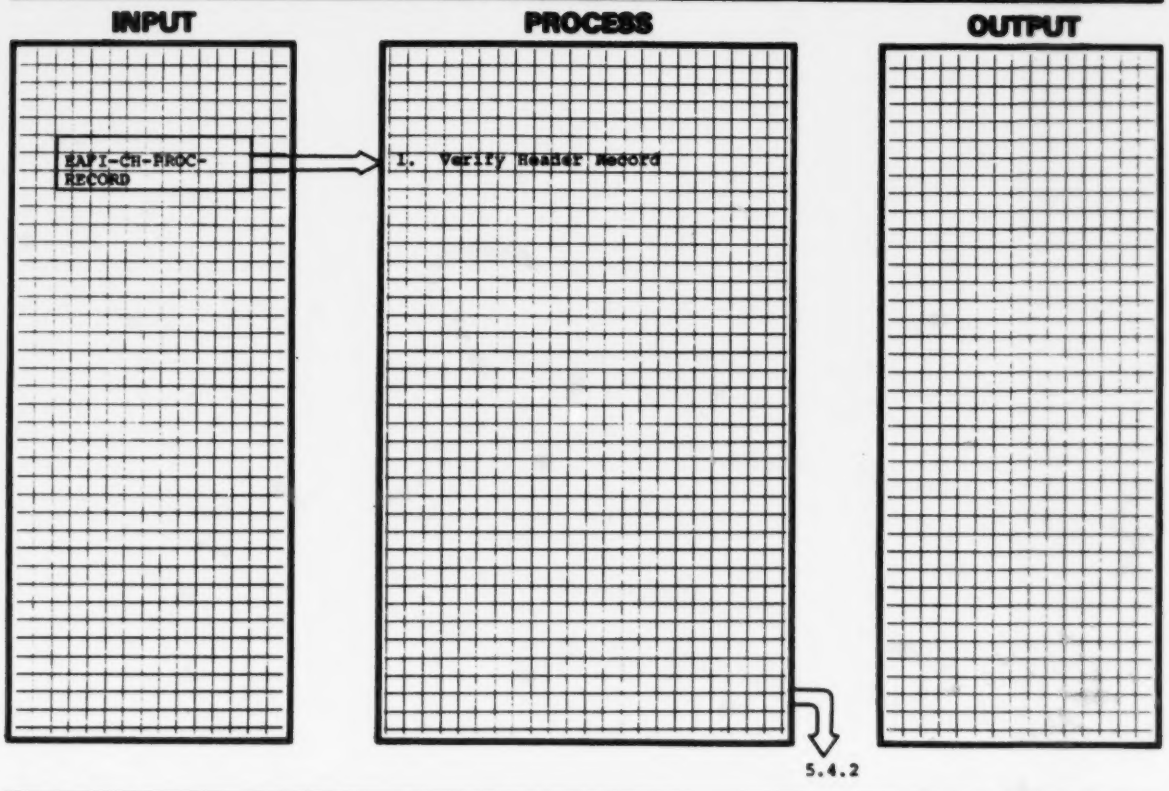


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header record on the Enforcement Actions Case History File is verified.	5.4.1	ENAC040	
2	The Enforcement Actions Condensed Report is produced. NOTE: Prior to processing, the Enforcement Actions Case History File is externally sorted on a 30 position sort key (positions 7-36) which has been determined by the user in program ENAC020.	5.4.2	ENAC040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Enforcement Actions Date: 2-8-77 Page: 1 of 1

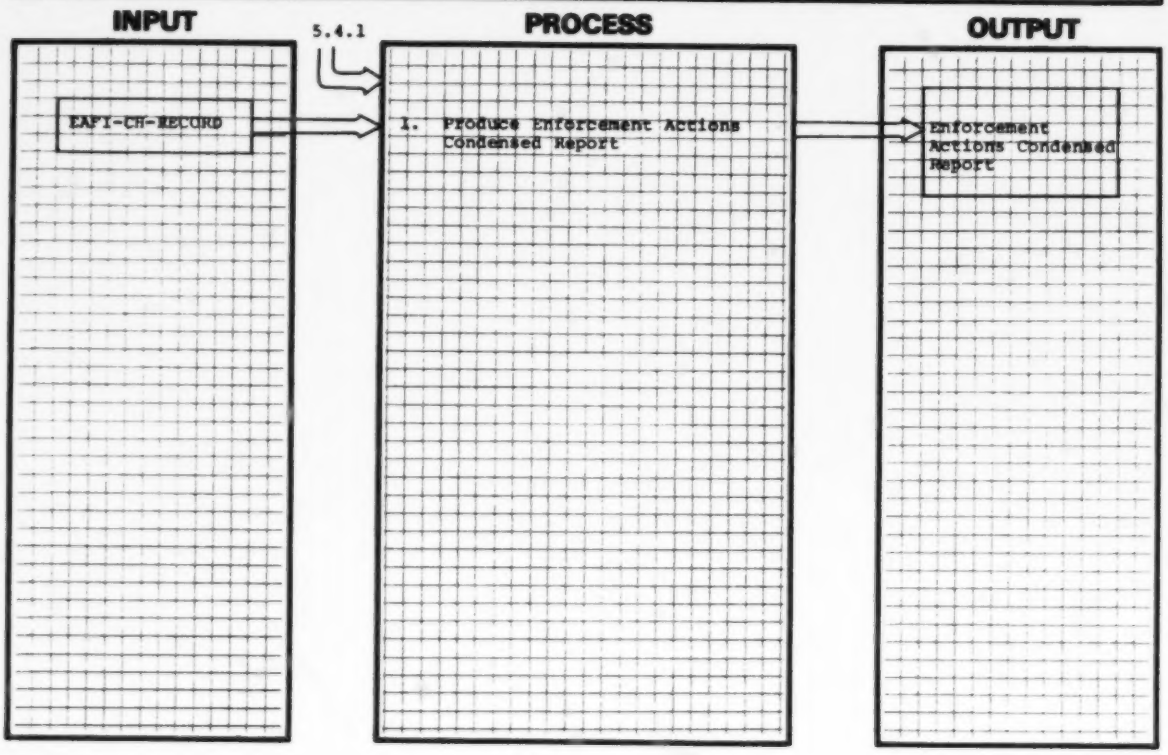
Diagram No.: 5.4.1 Description: Verify Header Report



STEP	EXTENDED DESCRIPTION	REFERENCE		
		HIPO	PROGRAM	OTHER
1	The header record on the Enforcement Actions Case History File is identified by 'LOW VALUES' in positions 6-36. If this record is not present, no other processing occurs. Position 5 of this record is checked for a 'Y'. If it is not present, no other processing occurs. Position 43 is checked for a 'Y'. If it is present, this indicates that the major sort was PWS-ID. The report date is obtained from positions 37-42.		ENAC040	200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Enforcement Actions **Date:** 2-8-77 **Page:** 1 of 1
Diagram No.: 5.4.2 **Description:** Produce Enforcement Actions Condensed Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Enforcement Actions Condensed Report is produced from the Enforcement Actions Case History File. Action date and violation date must be converted from Julian to report format. A total number of actions for each PWS-ID is calculated and printed if PWS-ID was the major sort key for the file. 'OPEN' is printed under case status if EAFI-CH-CLOSE-OPEN-INDIC contains a "1" and CLOSED if it contains a "2". Otherwise leave this field blank.		ENAC040	203 301

H. Sanitary Survey Subsystem (SRVY)

1. General Description

The Sanitary Survey Subsystem (SRVY) is an optional subsystem designed to satisfy Section 142.10 (B)(2) of the Drinking Water Standards Implementation Regulations which requires states that assume enforcement responsibility to have "A systematic program for conducting sanitary survey compliance..."

A survey of 24 states shows that many states do not have enough manpower to survey as they would like. The addition of non-community Public Water Systems (PWS's) to those already under regulation, will increase the need for a systematic method of scheduling sanitary surveys. The Sanitary Survey Subsystem is designed to provide this systematic method.

The method is based on assigning different weight to five parameters: PWS type size of population served, the type of source water and Public Water System has, compliance history, and period elapsed since last survey. State officials can change the relative weights until a satisfactory formula is reached.

2. SRVY Visual Table of Contents

Sanitary Survey Subsystem 7
SELECT From PWF .1
BUILD Internal Tables .1
EDIT Processing Options .2
BUILD Priority Selection Key .3
BUILD Selected Report Records .4
PRODUCE Survey Reports .1
PRODUCE Standard Sort Sequence Report .3
SORT PWS-ID File .2
SELECT PWF-Type File Records .3
PRODUCE Sanitary Survey Reports .2

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7.1 Select from Public Water File (PWF)
7.1.1 Build Internal Tables
7.1.2 Edit Processing Options
7.1.3 Build Priority Selection Key
7.1.4 Build Selected Report Records
7.1.5 Produce Standard Sort Sequence Report
7.2 Produce Sanitary Survey Reports
7.2.1 Produce Survey Reports
7.2.2 Sort PWS-ID File
7.2.3 Select Public Water File (PWF) Type File Records

Diagram Type: VTOC

Diagram No: 7

Subsystem: Sanitary Survey

Description: Sanitary Survey Subsystem VTOC

3. System Overview

The major functions of SRVY are:

- Scheduling
- Reporting

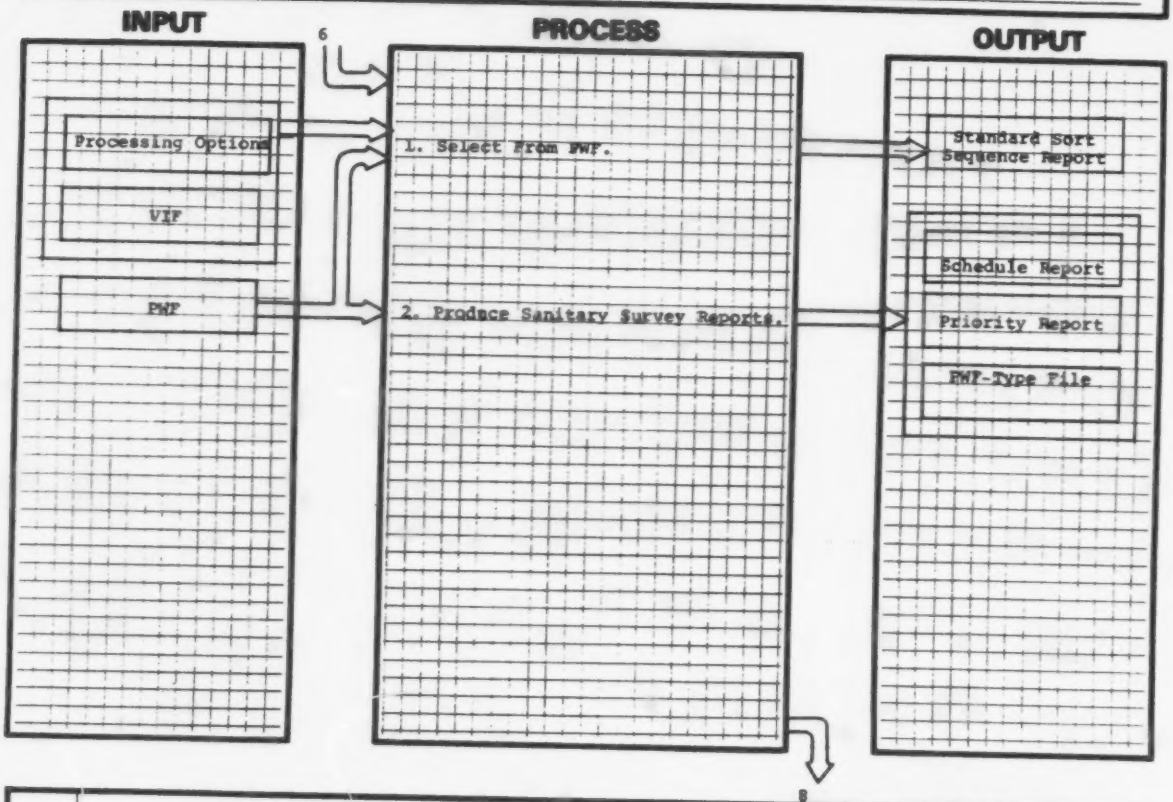
The features of the subsystem are:

- Simple, batch processing;
- Generation of Public Water File form designed as a turnaround document for computer input processing;
- Interaction with the PWSI Subsystem.

SRVY uses the Public Water File (PWF) and Violations File (VIF) to identify systems who are in violation and those who fit the prescribed conditions for selection.

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Sanitary Survey **Date:** 3-1-77 **Page:** 1 of 1
Diagram No.: 7 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Select Public Water Systems from the Public Water File (PWF) for Sanitary Survey. The Violations File (VIF) is used as part of the Selection Criteria.	7.1	SRVY010	
2	Produce the Priority Report, the Schedule Report, and the PWF-Type File.	7.2	SRVY020	

NARRATIVE

SUBSYSTEM: Sanitary Survey
PROGRAM NAME: SRVY010
DATE: March 14, 1977

I. OBJECTIVES:

The objective of this program is to read the Public Water File (PWF), the Violations File (VIF), user generated criteria and weighting factors in order to generate an output file containing records for the Sanitary Survey Priority Report and the Sanitary Survey Scheduling Report.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Public Water File	PWF-RECORD	PUSI.200
2.	Violations File	VIF-RECORD	WAQC.255
3.	Data Element Table	DET-RECORD	MSIS.201
4.	Code Value Table	CVT-RECORD	MSIS.206

B. Processing Options Records:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Processing Options	SRVI-PROC-RECORD	SRVY.100	SRVY.200
2.	Sort Options	SRVI-SORT-RECORD	SRVY.101	SRVY.201

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Survey Priority File	SRVI-P-REPORT-RECORD	SRVY.203
		SRVI-P-HEADER-RECORD	SRVY.204

2.	Survey Schedule File	SRVI-S-REPORT-RECORD	SRVY.205
		SRVI-S-HEADER-RECORD	SRVY.206

B. Report Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Standard Sort Sequence Report		MSIS.311 MSIS.309

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Records from the Data Element Table (DET) with the file ID of "PW" are read and used to build an internal DET. The Code Value Table (CVT) is read and an internal CVT is built which is used for editing the Processing Options.

2. The Processing Options are read and edited. If any errors are detected, then processing is discontinued.

3. Public Water File (PWF) records are read and matched with Violations File (VIF) records. Data from each of these records are combined with weighting factors from the Processing Options to generate the priority selection key.

4. Report records are built using the priority selection key, data from the PWF and a sort key derived from the Processing Options "SORT" record.

5. The Standard Sort Sequence Report is produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

2. Sort Options

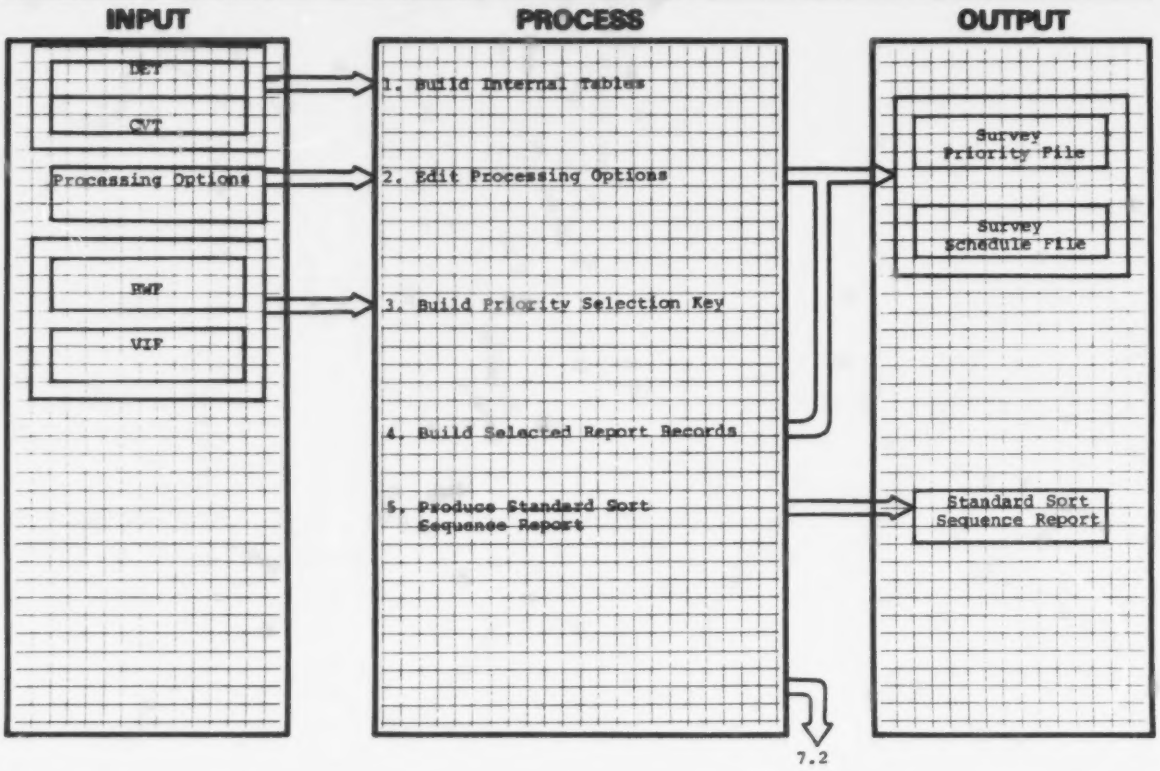
B. Data Element Descriptions

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Sanitary Survey **Date:** 3-7-77 **Page:** 1 of 1

Diagram No.: 7.1 **Description:** Select From PWF

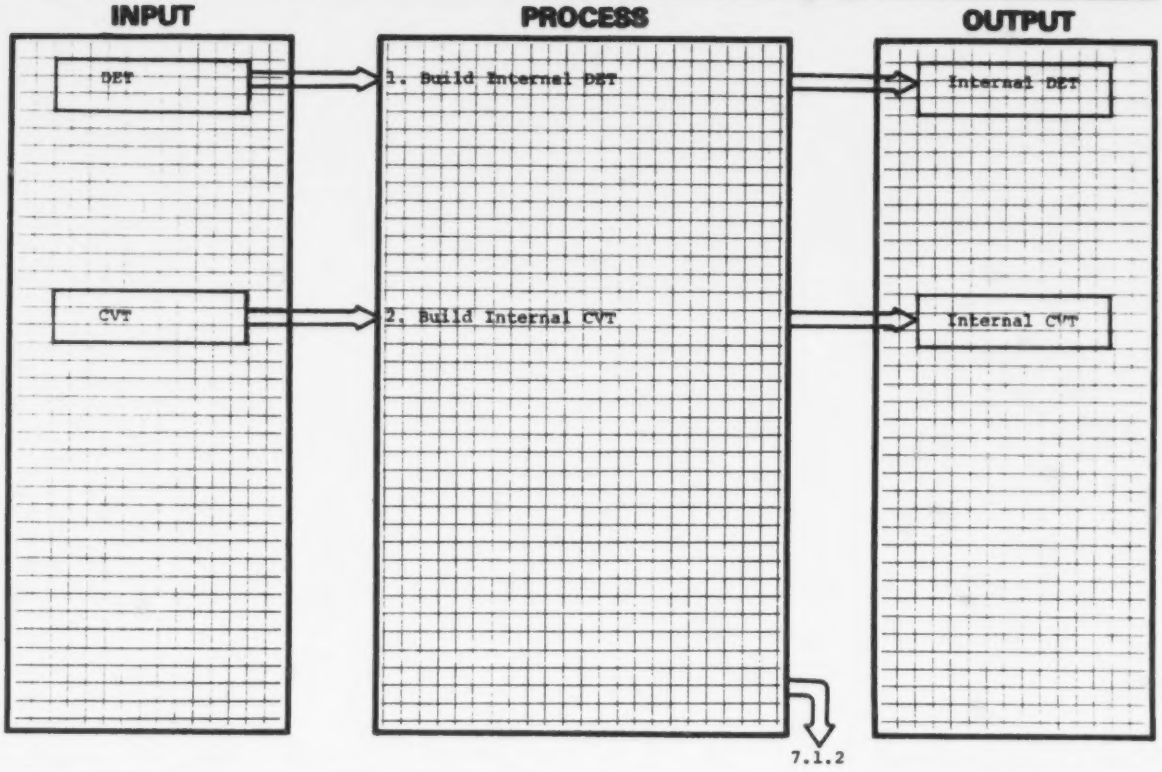


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An Internal Data Element Table (DET) is built and an Internal Code Value Table (CVT) is built.	7.1.1	SRVY010	
2	The Processing Options, "PROC" and "SORT" Records, are edited.	7.1.2	SRVY010	
3	A Priority Selection Key is built for each record on the Public Water File (PWF) using data from the Processing Options Record and from matching Violations File (VIF) records.	7.1.3	SRVY010	
4	A Sort Key is built and a record is written to the Survey Priority File. If a Schedule Report has been selected, a record is also written to the Survey Schedule File.	7.1.4	SRVY010	
5	The Standard Sort Sequence Report is produced.	7.1.5	SRVY010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Sanitary Survey Subsytem Date: 3-7-77 Page: 1 of 1

Diagram No.: 7.1.1 Description: Build Internal Tables

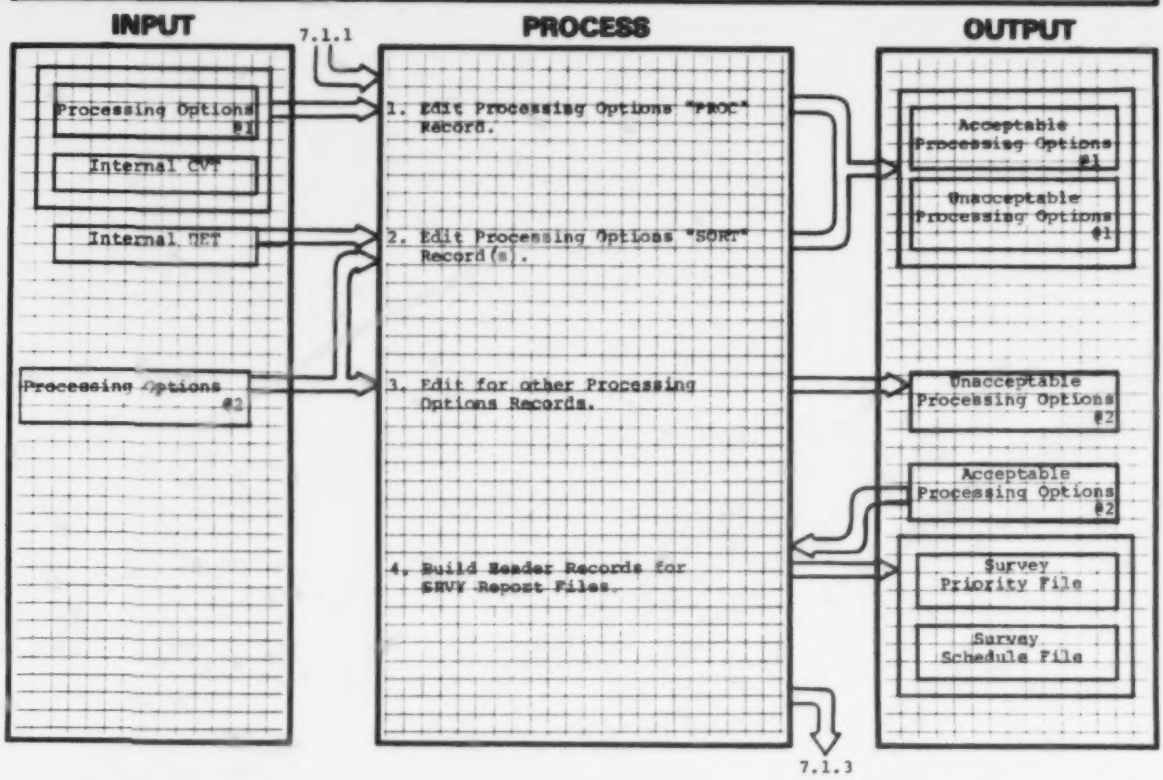


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An Internal Data Element Table (DET) is built utilizing the DET for the Public Water File (PWF). Only the file start position, data length, input length and mnemonic name are used to edit the Sort Options and build the Sort Key.		SRVY010	MSIS. 201
2	An Internal Code Value Table (CVT) is built utilizing the MS CVT. Obtain only those values for Region Code and District Code.		SRVY010	MSIS. 206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Sanitary Survey Subsystem **Date:** 3-7-77 **Page:** 1 of 1

Diagram No.: 7.1.2 **Description:** Edit Processing Options

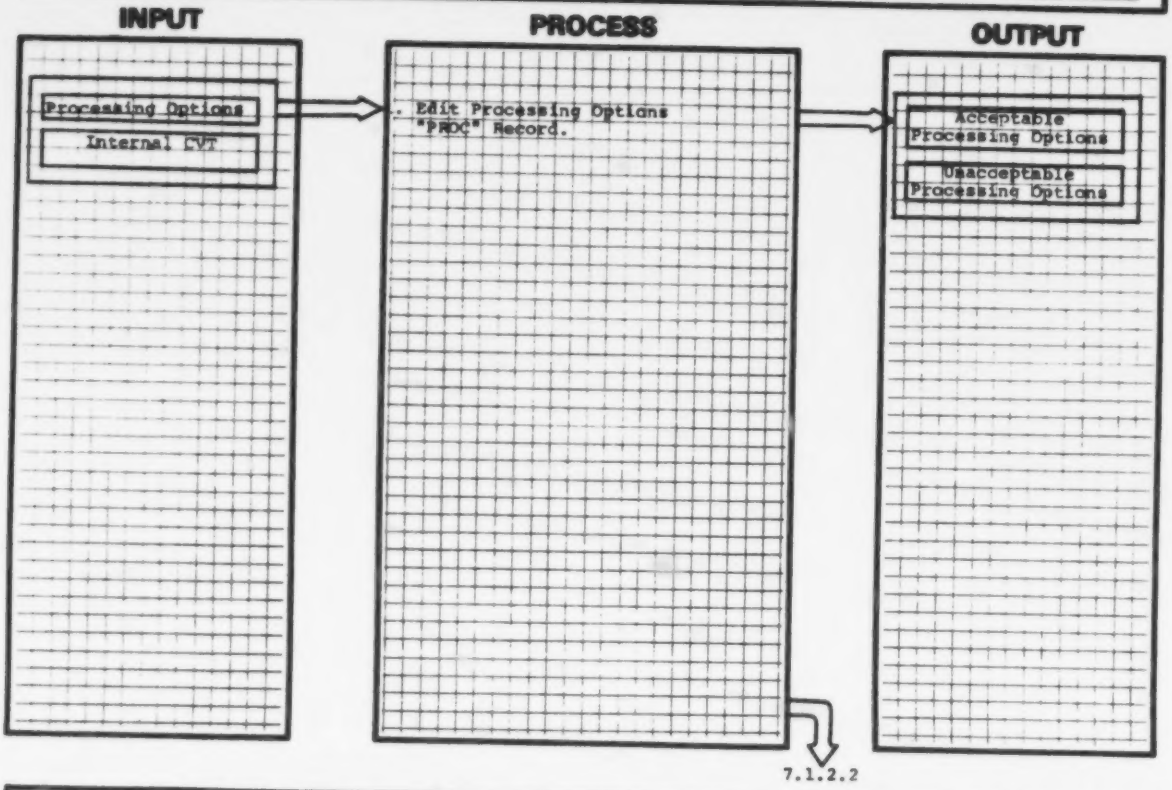


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with "PROC" in positions 1-4.	7.1.2.1	SRVY010	
2	Edit the Processing Options records with "SORT" in positions 1-4.	7.1.2.2	SRVY010	
3	Edit records with other than the above two keywords in positions 1-4.	7.1.2.3	SRVY010	
4	Build the header records for the Survey Priority File and the Survey Schedule File.	7.1.2.4	SRVY010	
	NOTE: Any Processing Options in error will cause error messages to be printed on the Standard Sort Sequence Report. (See HIPO 7.1.5)			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Sanitary Survey Subsystem **Date:** 7-7-77 **Page:** 1 of 2

Diagram No.: 7.1.2.1 **Description:** Edit Processing Options "PROC" Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with "PROC" in positions 1-4 as follows: a. The current date must be a valid date. b. All Selection Weights must be numeric and less than or equal to 1.0. The sum of all Selection Weights must equal 1.0. If any Selection Weight is blank, default to 0.0. c. Surveying Capacity must be numeric or blank. d. Priority Option must be "1", "2" or "3". If it is blank, default to "1". If it is "2", then at least one Region or District must be present. e. Region and District must be valid regions or districts on the Code Value Table (CVT), or blank if Priority Option is not equal to "2". f. Schedule Report must be equal to "Y", "N" or blank. If it is blank, default to "N". g. Surveying Period must have valid "From" and "To" dates, or the dates may be blank if Schedule Report is "N". h. PWF Report Option must be "1", "2", "3" or blank. If it is blank, default to "1". i. Priority Report must be equal to "Y", "N" or blank. If it is blank, default to "Y".		SRVY010	100 200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Sanitary Survey Subsyste **Date:** 3-7-77 **Page:** 2 of 2

Diagram No.: 7.1.2.1 **Description:** Edit Processing Options "PROC" Record

INPUT

PROCESS

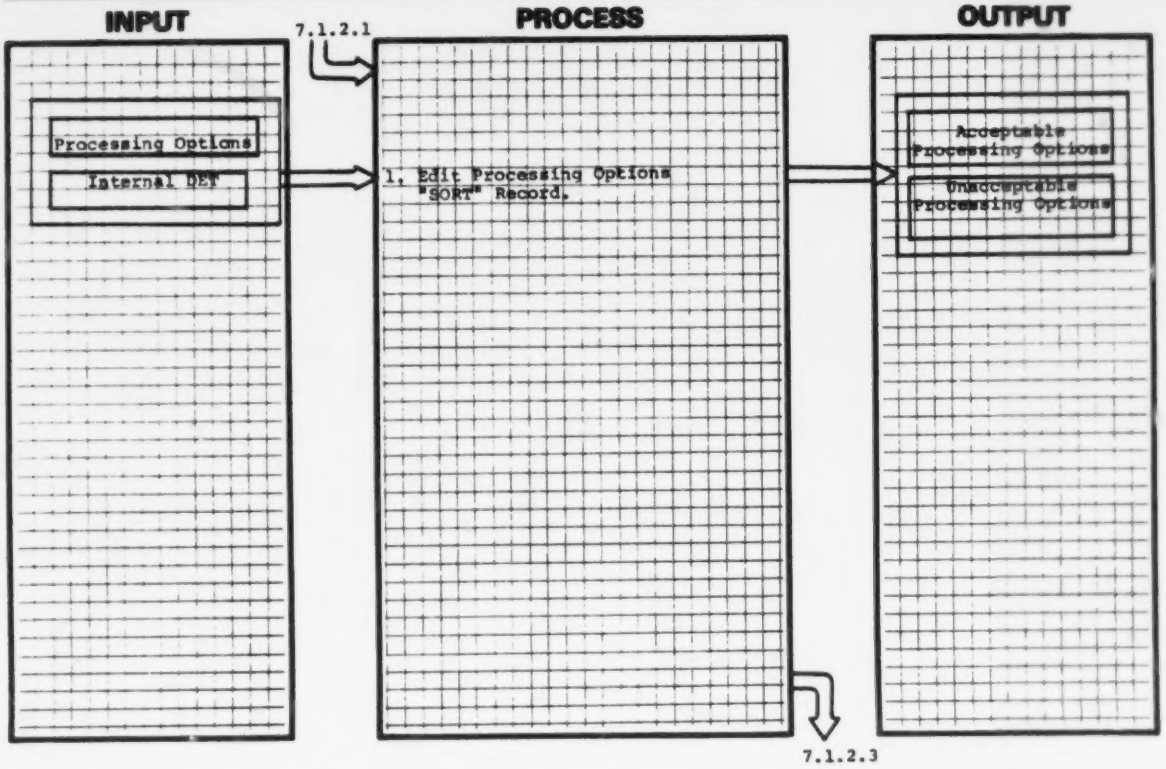
OUTPUT

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	If any default values are taken, write a warning message on the Standard Sort Sequence Report. (See HIPO 7.1.5) Processing will be terminated if any of the following conditions arise: a. If more than one "PROC" record occurs. b. If there is no "PROC" Record. c. If any editing errors occur that cannot be resolved by default values. If Processing is to be terminated, print the appropriate error message on the Standard Sort Sequence Report. (See HIPO 7.1.5)			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Sanitary Survey Subsystem **Date:** 3-7-77 **Page:** 1 of 2

Diagram No.: 7.1.2.2 **Description:** Edit Processing Options "SORT" Record

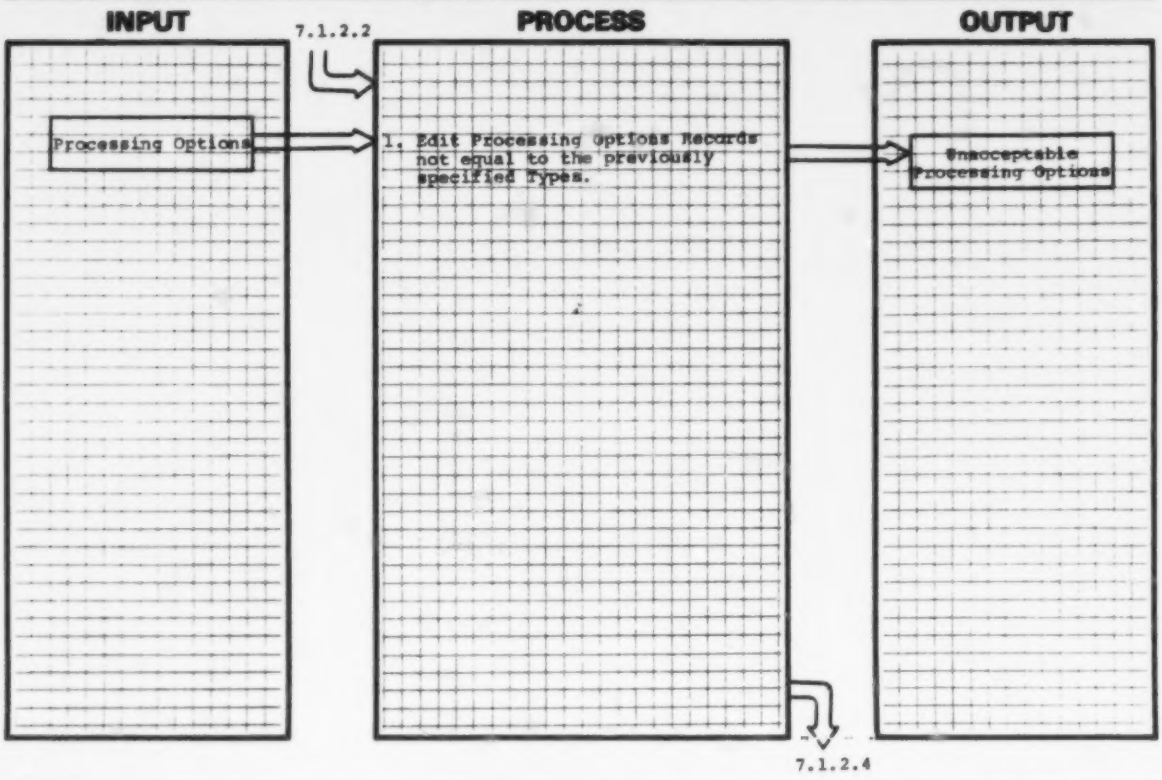


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with "SORT" in positions 1-4 of the records as follows: a. SRVI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the SRVI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, SRVI-SORT-MNEMONIC and SRVI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. SRVI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If SRVI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If SRVI-SORT-SEQUENCE is non-blank, then SRVI-SORT-MNEMONIC must be present. c. SRVI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to "A" or "D". If SRVI-SORT-SEQUENCE is non-blank, then SRVI-SORT-MODE must be present.		SRVY010	101 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Sanitary Survey Subsyster **Date:** 3-7-77 **Page:** 1 of 1

Diagram No.: 7.1.2.3 **Description:** Edit for other Processing Options Records



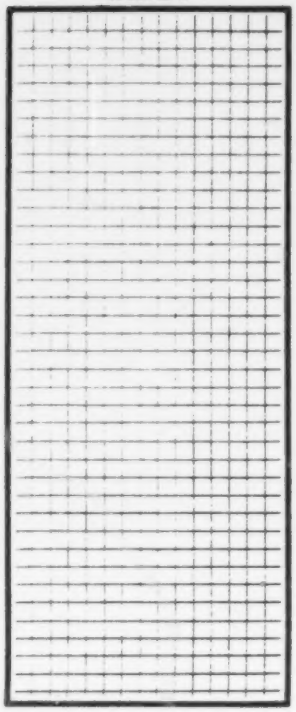
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit all other Processing Options records. All of these records are in error and processing should be terminated.		SRVY010	

MODEL STATE INFORMATION SYSTEM

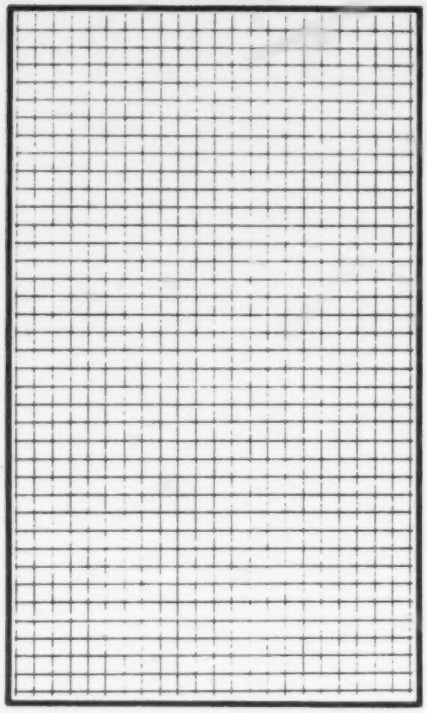
Diagram Type: Detail **Subsystem:** Sanitary Survey Subsystem **Date:** 3-7-77 **Page:** 2 of 2

Diagram No.: 7.1.2.2 **Description:** Edit Processing Options "SORT" Record

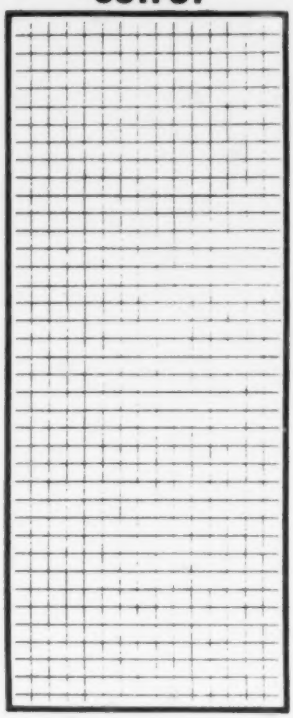
INPUT



PROCESS



OUTPUT

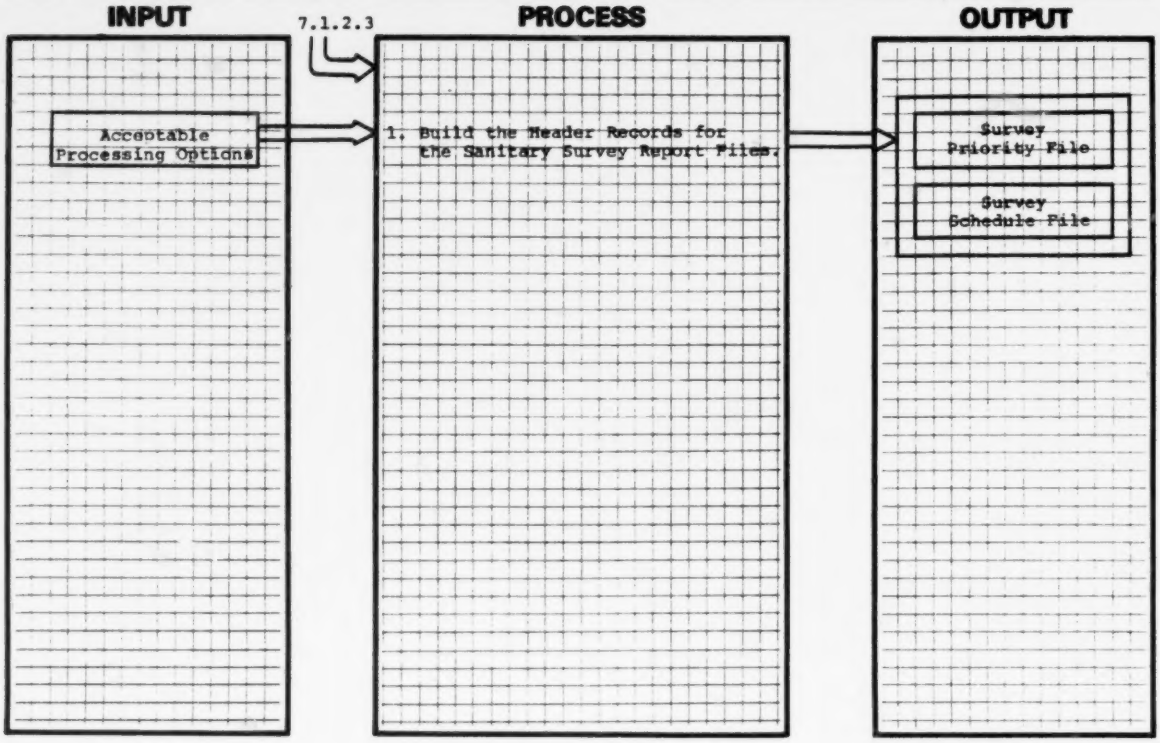


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	As each SRVI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-DATA-LENGTH) are totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error, exists on any 'SORT' record, then it will be written on the Standard Sort Sequence Report and processing will be terminated. NOTE: If Priority Option equals "3" or Priority Report equals "N", then all Sort Records are in error and Processing should be terminated.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Sanitary Survey Subsystem **Date:** 3-7-77 **Page:** 1 of 1

Diagram No.: 7.1.2.4 **Description:** Build Header Records for SRVY Report Files

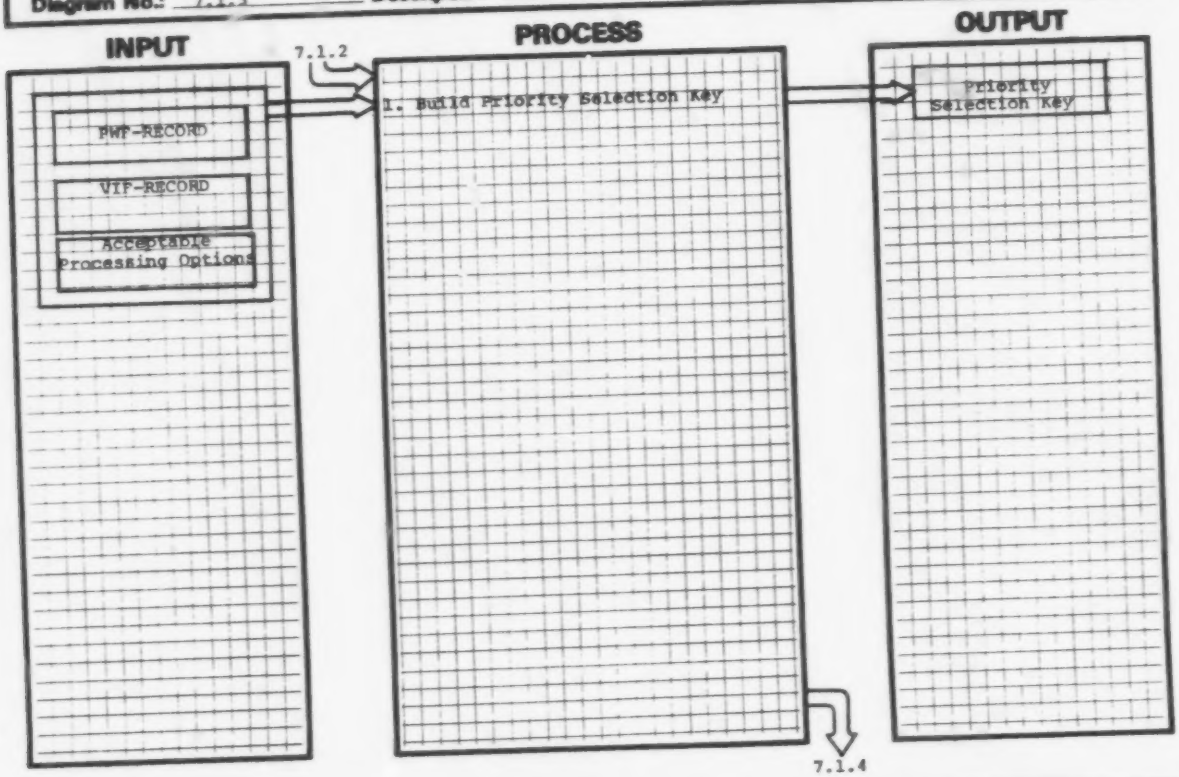


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build Header Records for the report files as follows: a. Move'LOW VALUES'to the Sort Key. b. Move all other fields from the Processing Options record to their corresponding fields in the header record. c. Write the same header record to the Survey Report File and to the Survey Schedule File, with the following exception; move "PRIORITY REPORT" to SRVI-PH-REPORT-TITLE for the Survey Priority File move "SCHEDULE REPORT" to SRVI-SH-REPORT-TITLE. d. SRVI-PH-DISTRIBUTION-FACTOR is determined as follows: If Priority Option is equal to "3", then divide the number of regions in the state (Total # of Region Codes on the CVT) into the Surveying Capacity. If Priority Option is not equal to "3", leave this field blank. If processing is to be terminated, move "N" to SRVI-SH-SCHEDULE-REPORT and SRVI-PH-PRIORITY-REPORT and write header records to both output files.		SRVY010	200 204 206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Sanitary Survey Subsyste Date: 3-7-77 Page: 1 of 5

Diagram No.: 7.1.3 Description: Build Priority Selection Key



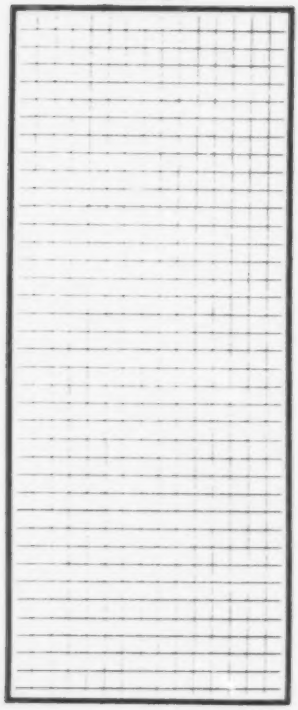
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	To build the Prioity Selection Key, five factors are considered. These are: a. The Type of Water Supply b. Population Served c. History of Past Violations d. Date of Last Sanitary Survey e. Type of Source Each Public Water File (PWF) record will be examined. The fields containing the criteria listed above will be translated into a numeric point value between 0.0 and 0.9. These point values are obtained as follows: Criterion 1 Type of Water Supply: Check PWF-PLANT-TYPE. VALUE — POINT VALUE C — 0.550 Any other — 0.450		SRVY010	PWSI. 200 WAQC. 255

MODEL STATE INFORMATION SYSTEM

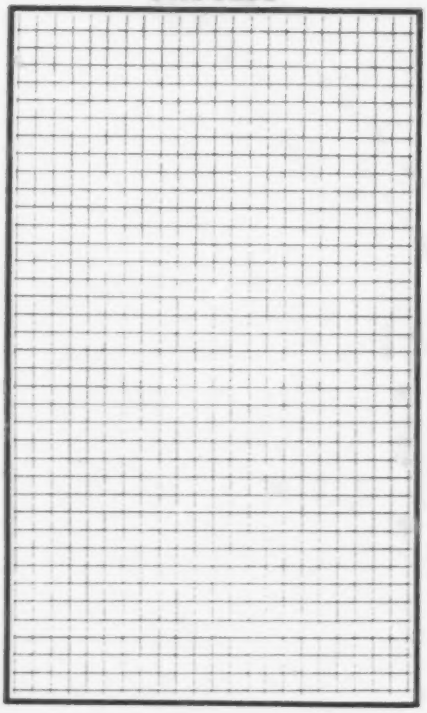
Diagram Type: Detail Subsystem: Sanitary Survey Date: 3-7-77 Page: 2 of 5

Diagram No.: 7.1.3 Description: Build Priority Selection Key

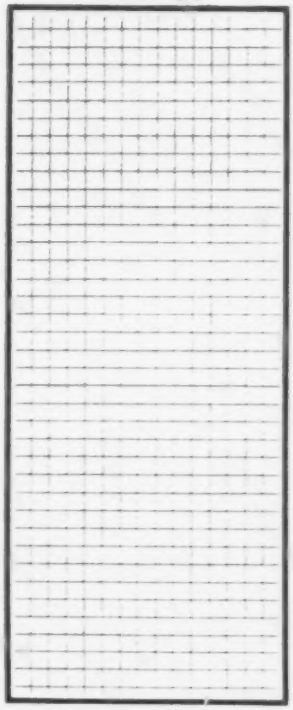
INPUT



PROCESS



OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER

Criterion 2

Population served:

Check PWF-PLANT-POPULATION-SERVED and use the following table:

RANGE		POINT VALUE
0	- 3,300	0.000
3,301	- 5,800	0.045
5,801	- 8,500	0.090
8,501	- 11,100	0.135
11,101	- 13,700	0.180
13,701	- 16,300	0.225
16,301	- 18,900	0.270
18,901	- 21,500	0.315
21,501	- 24,000	0.360
24,001	- 28,000	0.405
28,001	- 50,000	0.450
50,001	- 76,000	0.495
76,001	- 130,000	0.540
130,001	- 290,000	0.585
290,001	- 500,000	0.630
500,001	- 780,000	0.675
780,001	- 1,140,000	0.720
1,140,001	- 1,630,000	0.785
1,630,001	- 2,270,000	0.810
2,270,001	- 3,620,000	0.855
3,620,001	- and higher	0.900

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Sanitary Survey Subsystem Date: 3-7-77 Page: 3 of 5

Diagram No.: 7.1.3 Description: Build Priority Selection Key

INPUT

PROCESS

OUTPUT

STEP	DETAILED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER

Criterion 3

History Past Violations:

Read all Violations File (VIF) Records with the same PWS-ID as the Public Water File (PWF) Record under examination and with a regulation level equal to "SP". Test VIF-MCL-VIOL-SAMPL-START-DATE for each of these VIF records. All of those records with a VIF-MCL-VIOL-SAMPL-START-DATE that is less than two years old, relative to the current date in the Processing Options, will be used for this criterion. The following Table shows how to derive the Point Value.

# of Violations in Last Two Years	Point Value
0	0.0
1 - 3	0.1
4 - 7	0.2
8 - 11	0.3
12 - 15	0.5
16 - 19	0.7
20 - up	0.9

NOTE: The VIF has been externally sorted by PWS-ID.

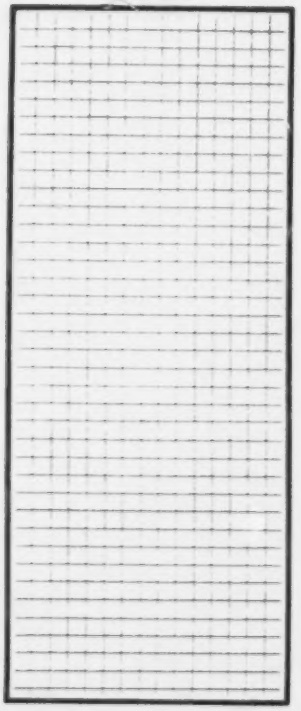
NOTE: If VIF-MCL-VIOL-SAMPL-START-DATE is zero, then use VIF-VIOLATION-DATE.

MODEL STATE INFORMATION SYSTEM

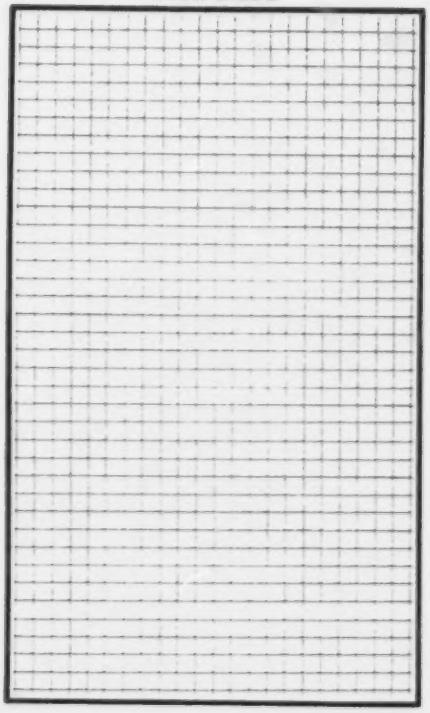
Diagram Type: Detail Subsystem: Sanitary Survey Date: 3-7-77 Page: 4 of 5

Diagram No.: 7.1.3 Description: Build Priority Selection Key

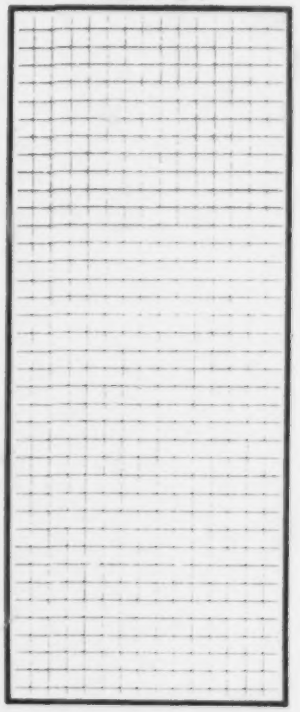
INPUT



PROCESS



OUTPUT



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER

Criterion 4

Date of Last Sanitary Survey:

Compare PWF-PLANT-LAST-SURVEY-DATE to the current date in the Processing Options record and check the following Table:

# of years	# of days since last Sanitary survey	Point Value
0 - 1	0 - 365	0.0
1 - 2	366 - 730	0.1
2 - 3	731 - 1,095	0.3
3 - 4	1,096 - 1,460	0.5
4 - 5	1,461 - 1,825	0.7
5 - over	1,825 - and higher	0.9

Criterion 5

Type of Source:

If PWF-PLANT-SOURCE-CODE has any occurences that are equal to "S" or "P", then the Point Value will be 0.550; otherwise use 0.450.

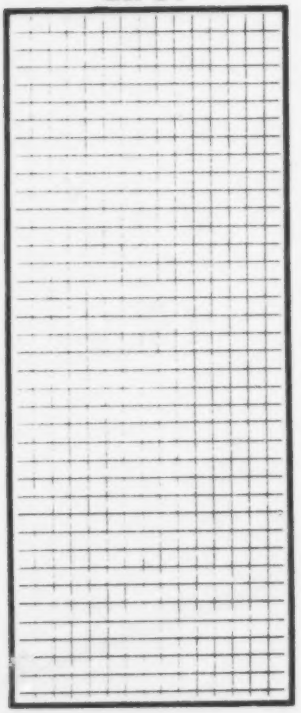
Multiply the Point Value of each Criterion by the weighting factor obtained from the Processing Options.

MODEL STATE INFORMATION SYSTEM

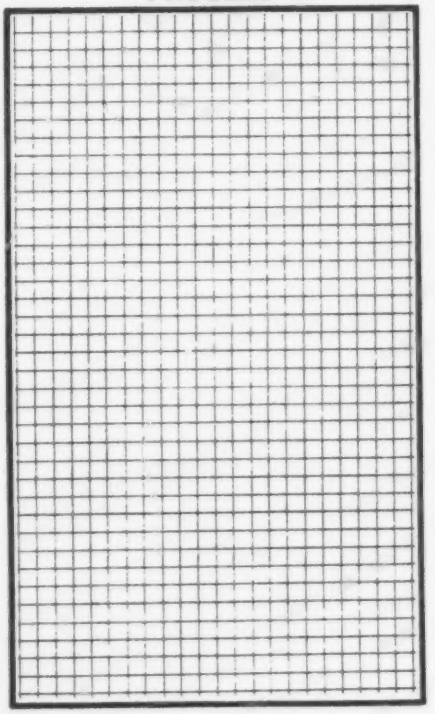
Diagram Type: Detail Subsystem: Sanitary Survey Date: 3-7-77 Page: 5 of 5

Diagram No.: 7.1.3 Description: Build Priority Selection Key

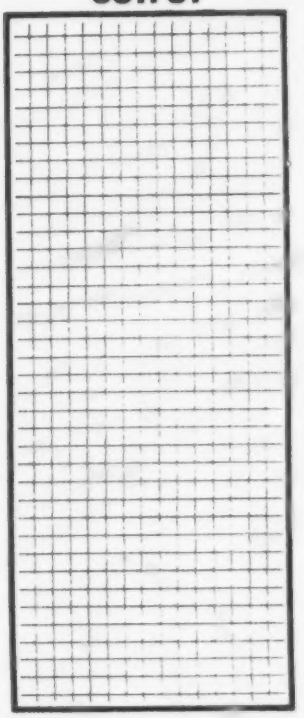
INPUT



PROCESS



OUTPUT

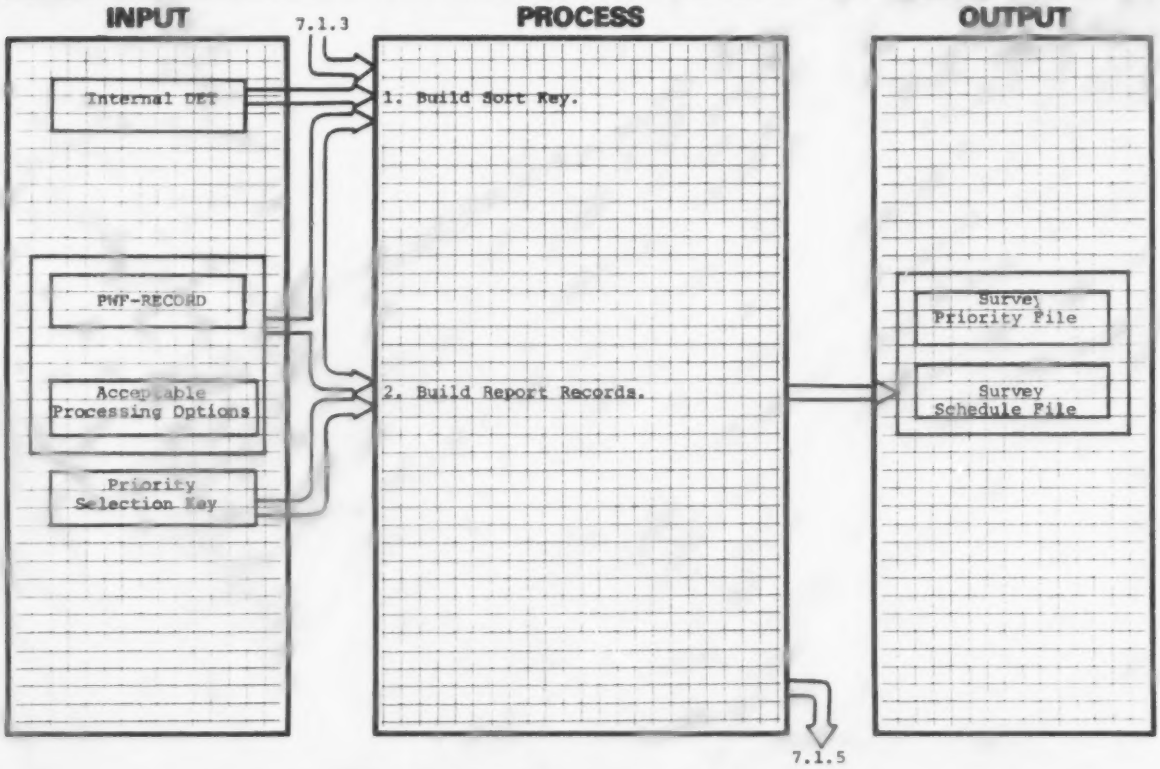


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Add the results of the above multiplications together to obtain the total Point Value for the Public Water System (PWS). This total Point Value is the Priority Selection Key. NOTE: If Priority Option 2 has been specified, then only process those Public Water File (PWF) Records that have the same Regions and Districts as specified in the Processing Options.			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Sanitary Survey Subsystem **Date:** 3-7-77 **Page:** 1 of 3

Diagram No.: 7.1.4 **Description:** Build Selected Report Records



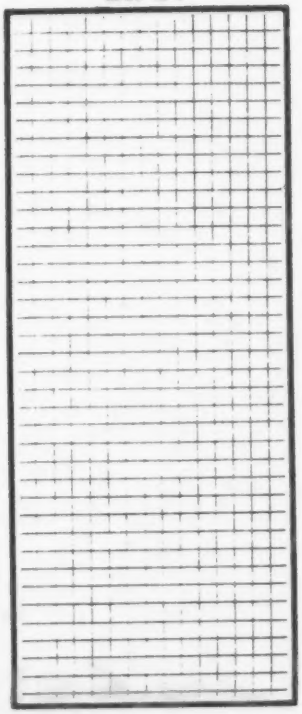
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Public Water File (PWF) based on the criteria on the "SORT" Options record as follows: a. Redefine the entire (or if array: non-variable portion of the) PWF record as an array of one character values. b. Match the SRVI-SORT-MNEMONIC with the DET-MNEMONIC-NAME in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the PWF. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the PWF. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 (2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case all possible values in the array must be checked as follows:		SRVY010	PWSI. 200

MODEL STATE INFORMATION SYSTEM

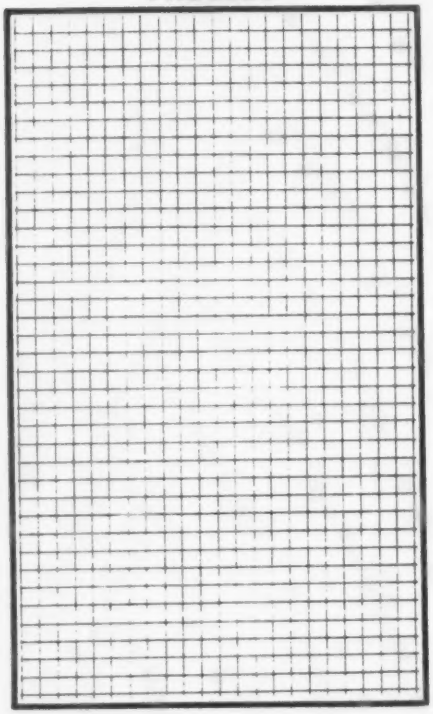
Diagram Type: Detail Subsystem: Sanitary Survey Subsystem Date: 3-7-77 Page: 2 of 3

Diagram No.: 7.1.4 Description: Build Selected Report Records

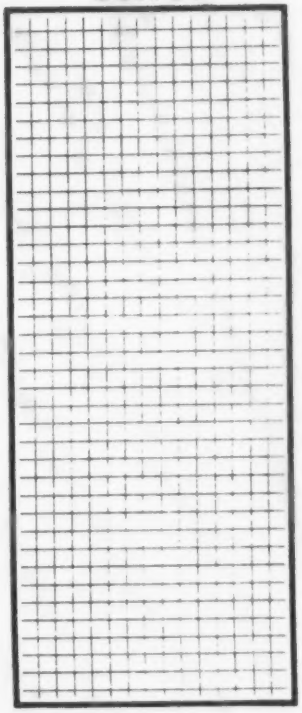
INPUT



PROCESS



OUTPUT



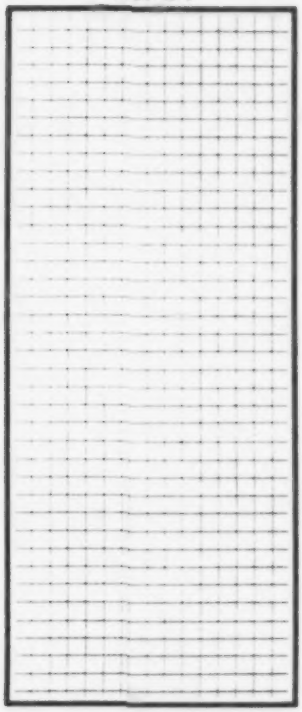
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(a) If the SRVI-SORT-MODE = "A" (ascending), the lowest value of the data element must be used in building the sort key. (b) If the SRVI-SORT-MODE = "D" (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alphanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise, use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the SRVI-SORT-MODE = "A" (ascending) move the value obtained in c. to the proper location in the sort key. If the SRVI-SORT-MODE = "D" (descending) redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the SRVI-SORT-SEQUENCE. NOTE: If no Sort Options Records are present, then this sort key will be blank.			

MODEL STATE INFORMATION SYSTEM

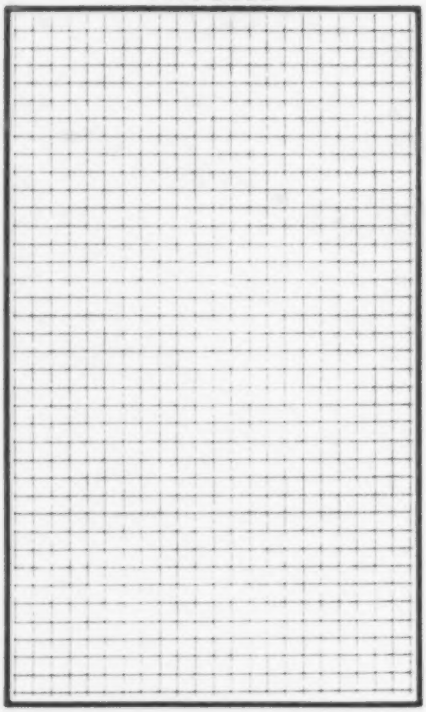
Diagram Type: Detail Subsystem: Sanitary Survey Date: 3-7-77 Page: 3 of 3

Diagram No.: 7.1.4 Description: Build Selected Report Records

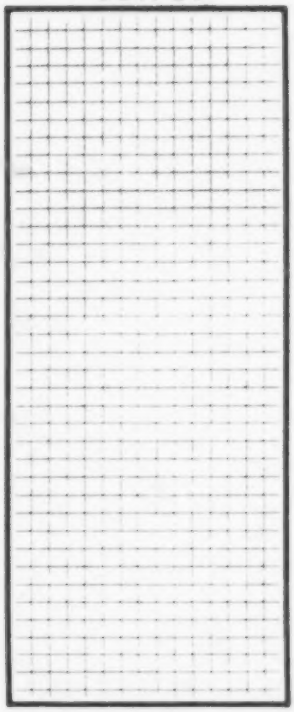
INPUT



PROCESS



OUTPUT

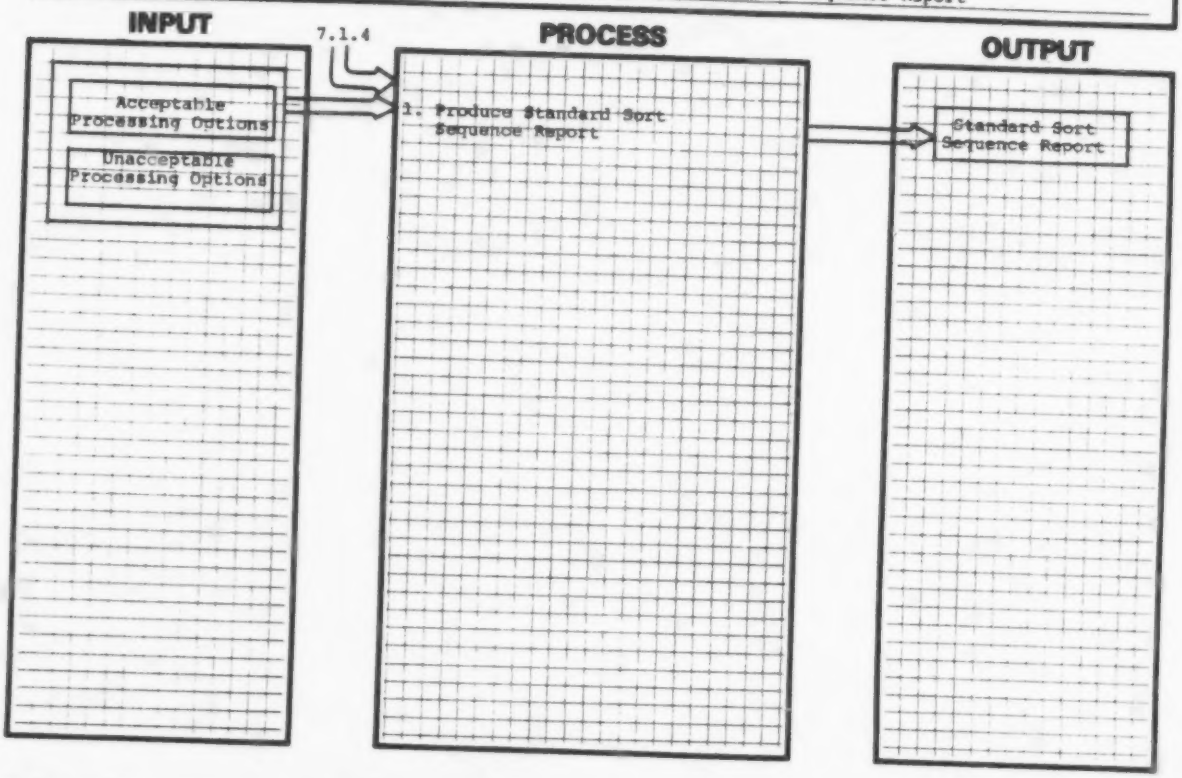


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	e. The sort key for the Survey Priority File will be one of the following: For Priority Option 1 or 2, use the sort key generated in (a) thru (d). For Priority Option 3, use Region Code and District Code. f. The sort key for the Survey Schedule File will be one of the following: For Priority Option 1 or 2, use blanks. For Priority Option 3, use Region Code and District Code.			
2	Selected data elements from the Public Water File (PWF) Records are combined with the Sort Key and the Priority Selection Key to produce report records for the Survey Priority File. If any source code equals "S" or "P", then move "S" to SRVI-P-PLANT-SOURCE-CODE. Otherwise, move "G" to SRVI-P-PLANT-SOURCE-CODE. If the Schedule Report Option was specified in the Processing Options, report records are produced for the Survey Schedule File. NOTE: The records that are written to both output files will be identical except for the sort key.			PWSI. 200 203 205

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Sanitary Survey Subsyster **Date:** 3-7-77 **Page:** 1 of 1

Diagram No.: 7.1.5 **Description:** Produce Standard Sort Sequence Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	The Standard Sort Sequence Report is always produced. The following two formats may be used: a. The Standard Sort Sequence Report contains: (1) Sort Sequence mnemonics (2) Sort Mode b. If any Processing Options records are in error, the records and associated error messages are produced instead of, or in addition to, the information in (a).		SRVY010	MSIS. 309 311

NARRATIVE

SUBSYSTEM: Sanitary Survey
PROGRAM NAME: SRVY020
DATE: February 28, 1977

I. OBJECTIVES:

The objective of this program is to generate the Sanitary Survey Priority Report, the Sanitary Survey Schedule Report and a Public Water File (PWF)-Type File.

II. INPUTS:

A. RECORD FORMS AND LAYOUTS:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Survey Priority File	SRVI-P-REPORT-RECORD	SRVY.203
		SRVI-P-HEADER-RECORD	SRVY.204
2.	Survey Schedule File	SRVI-S-REPORT-RECORD	SRVY.205
		SRVI-S-HEADER-RECORD	SRVY.206
3.	Public Water File	PWF-RECORD	PWSI.200

B. PROCESSING OPTIONS RECORD:

Not Applicable

III. OUTPUTS:

A. RECORD LAYOUTS:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Processing Options	PWFI-PROC-RECORD	PWSI.204
2.	Public Water File (PWF)-Type File	PWF-RECORD	PWSI.200

B. REPORT LAYOUTS:

NAME	EXHIBIT LAYOUT
1. Sanitary Survey Priority Report	SRVY.300
2. Sanitary Survey Schedule Report	SRVY.301

C. TURNAROUND DOCUMENTS:

Not Applicable

IV. FUNCTIONS:

1. Header lines for the Sanitary Survey Priority Report and the Sanitary Survey Schedule Report are produced from the first record of the Survey Priority File and the Survey Schedule File. Report detail lines are produced from report records of the Survey Priority File and the Survey Schedule File. PWS-ID numbers from report records of the Survey Schedule File are written to a temporary file.

2. The temporary PWS-ID file is sorted into ascending sequence.

3. Based on the PWS-ID numbers from the Survey Schedule File, Public Water File (PWF) records are selected for the PWF-Type File.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

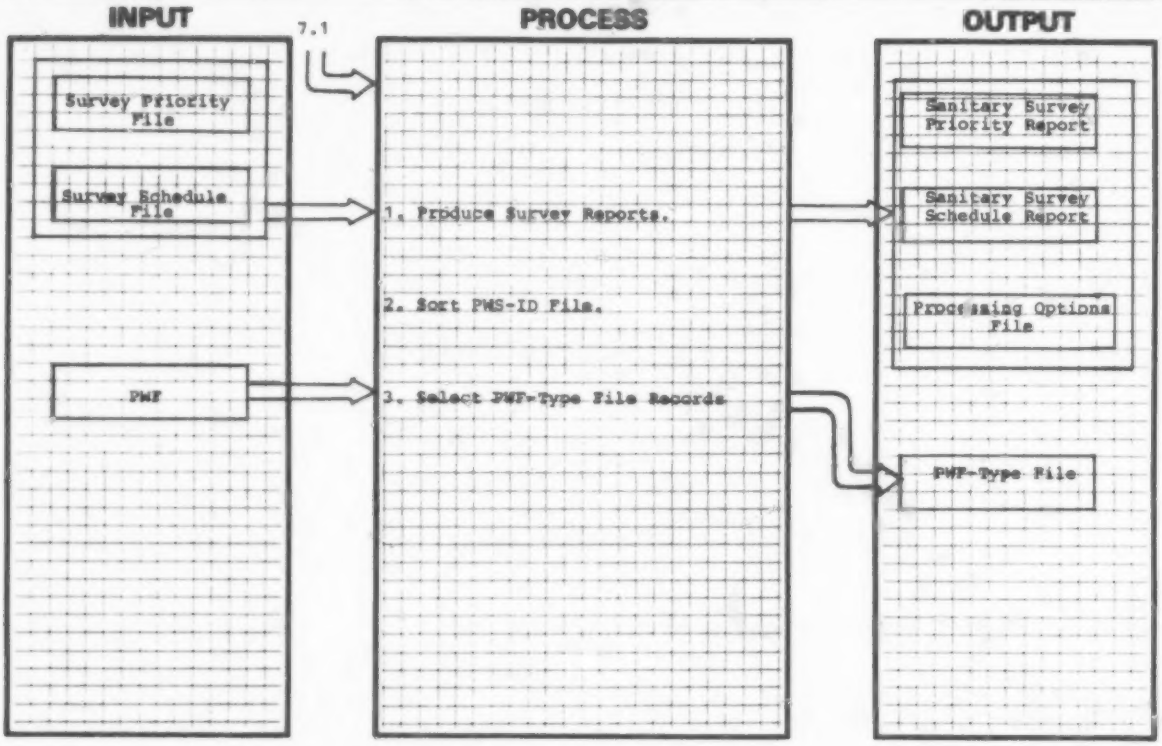
Not Applicable

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Sanitary Survey **Date:** 4-1-77 **Page:** 1 of 1
Diagram No.: 7.2 **Description:** Produce Sanitary Survey Reports

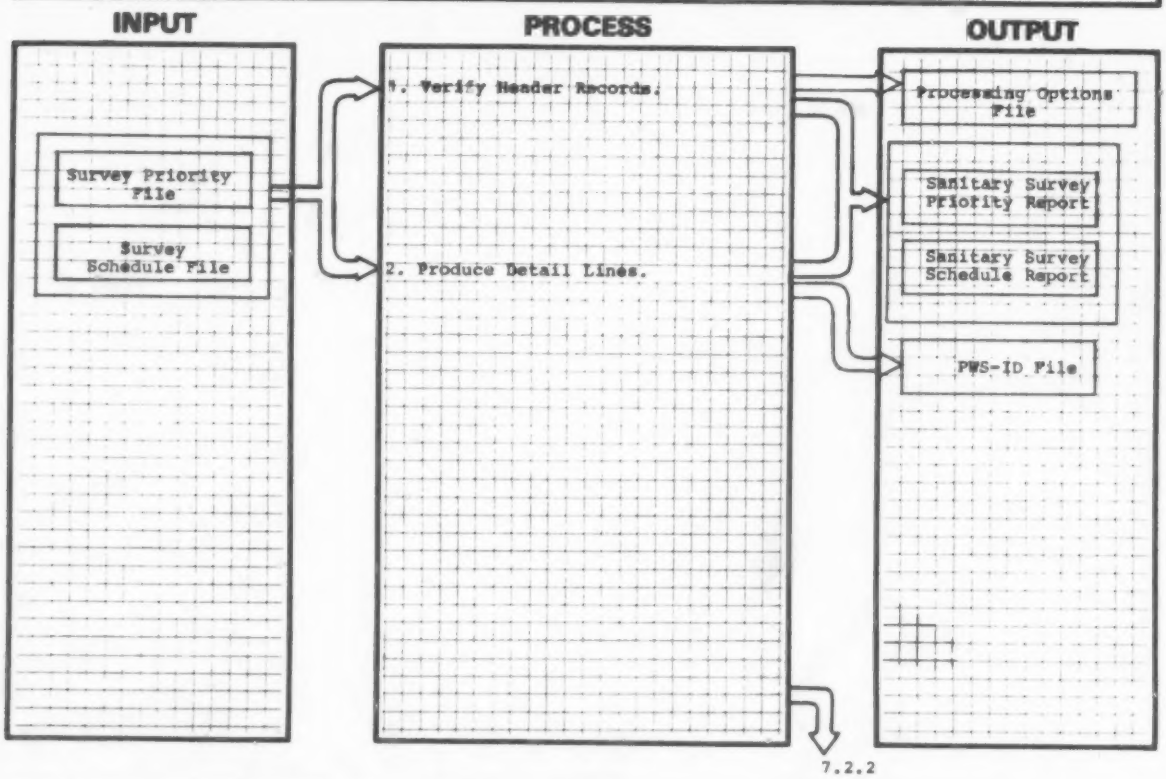


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Sanitary Survey Priority Report is produced using the Survey Priority File. This file has been pre-sorted on the sort key designated by the Processing Options "SORT" records and by the Priority Selection Key. The Sanitary Survey Schedule Report is produced using the Survey Schedule File. This file has been pre-sorted on the sort key and on the Priority Selection Key. In addition, the Processing Options File is built.	7.2.1	SRVY020	
2	The PWS-ID File of all PWS-ID's printed on the Schedule Report is internally sorted.	7.2.2	SRVY020	
3	The Public Water File (PWF) is searched. All records with a PWS-ID that matches a PWS-ID on The Schedule Report are selected for output to the PWF-Type File.	7.2.3	SRVY020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Sanitary Survey **Date:** 4-1-77 **Page:** 1 of 1

Diagram No.: 7.2.1 **Description:** Produce Survey Reports

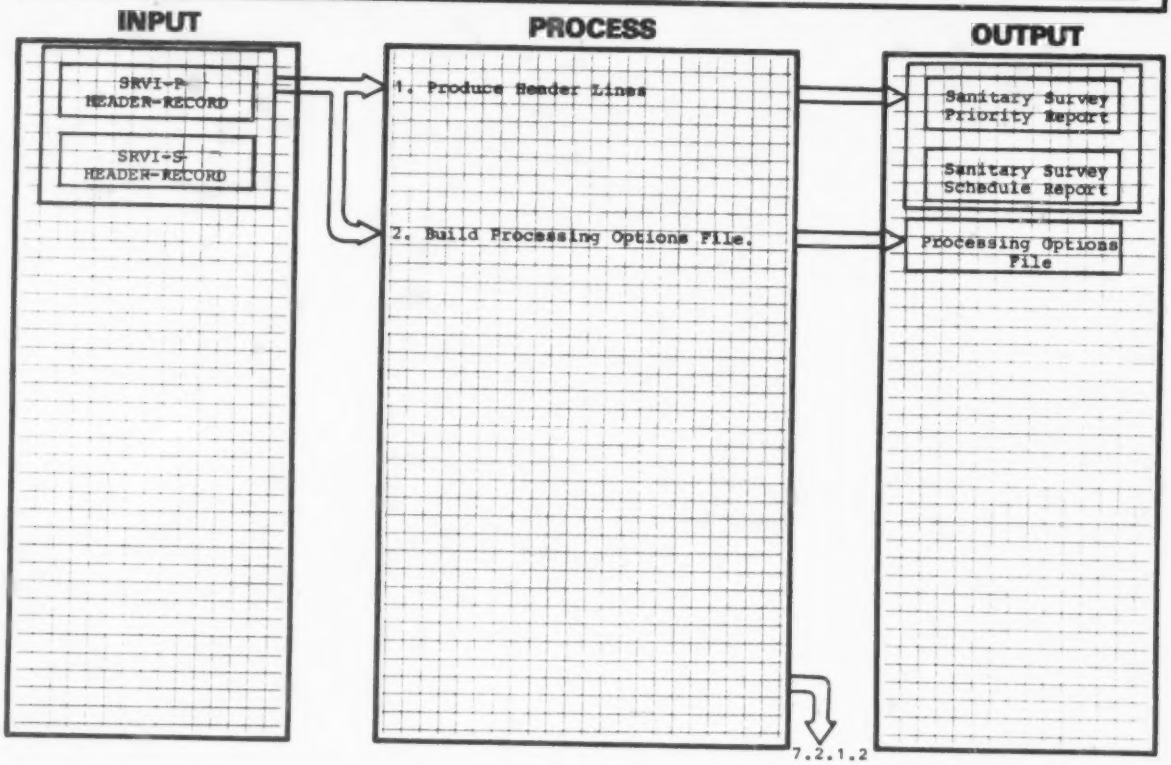


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Read the header records of the Survey Priority File and the Survey Schedule File. Verify the header record on each file. Produce header lines for the requested Sanitary Survey Reports. In addition, build the Processing Options File.	7.2.1.1	SRVY020	
2	Produce the detail lines of the requested Sanitary Survey Reports from the report records of the Survey Priority File and the Survey Schedule File. In addition, build the Temporary PWS-ID File.	7.2.1.2	SRVY020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Sanitary Survey Date: 8-1-77 Page: 1 of 2

Diagram No.: 7.2.1.1 Description: Verify Header Records



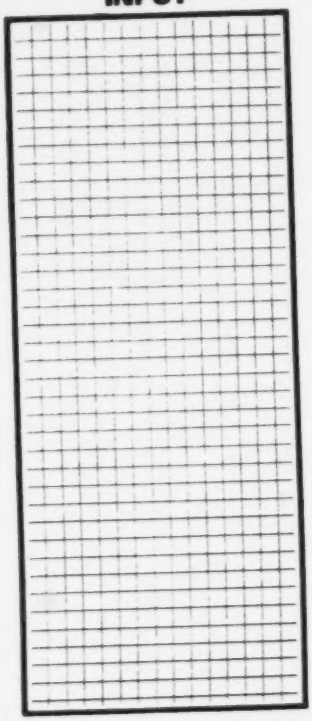
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The header lines for the Sanitary Survey Priority Report and the Sanitary Survey Schedule Report are produced, if requested, as follows: Move SRVI-PH-CURRENT-DATE to the Date field in the third header line. Move SRVI-PH-TYPE-WT to the PWS Type field in the Selection Weight Header Line. Move SRVI-PH-POP-WT to the Population Served field in the Selection Weight Header Line. Move SRVI-PH-COMP-WT to the Compliance field in the Selection Weight Header Line. Move SRVI-PH-LAST-DATE-WT to the Last Survey Date field in the Selection Weight Header Line. Move SRVI-PH-SOURCE-WT to the Type Source field in the Selection Weight Header Line. Move SRVI-PH-REPORT-TITLE to the Report Title field in the fourth header line. If SRVI-SH-SCHEDULE-REPORT is equal to "Y", then generate the fifth header line for the Schedule Report as follows: Move SRVI-SH-FROM-DATE to the From date field. Move SRVI-SH-TO-DATE to the To date field. Move SRVI-SH-CAPACITY to the Surveying Capacity Field.		SRVY020	204 300 301 206

MODEL STATE INFORMATION SYSTEM

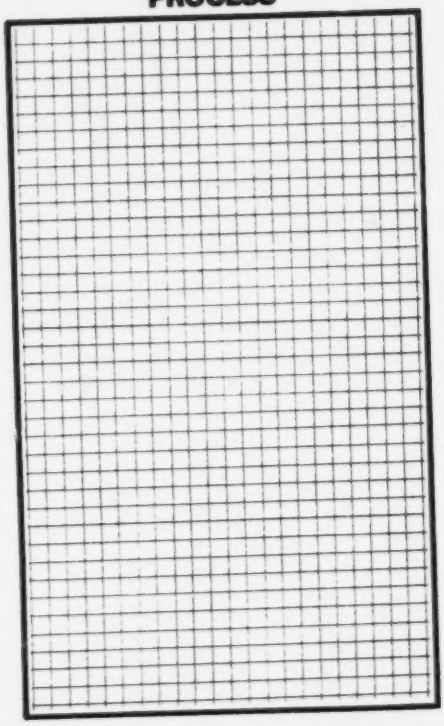
Diagram Type: Detail Subsystem: Sanitary Survey Date: 4-1-77 Page: 2 of 2

Diagram No.: 7.2.1.1 Description: Verify Header Records

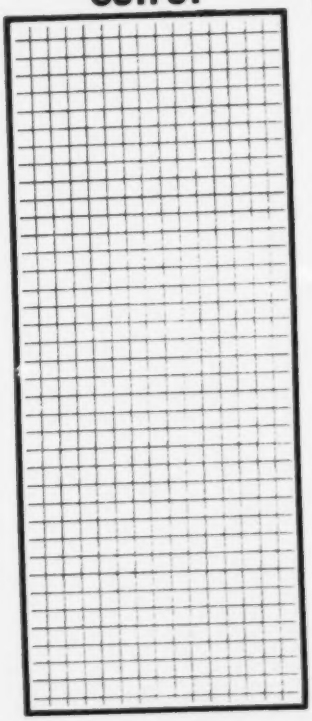
INPUT



PROCESS



OUTPUT

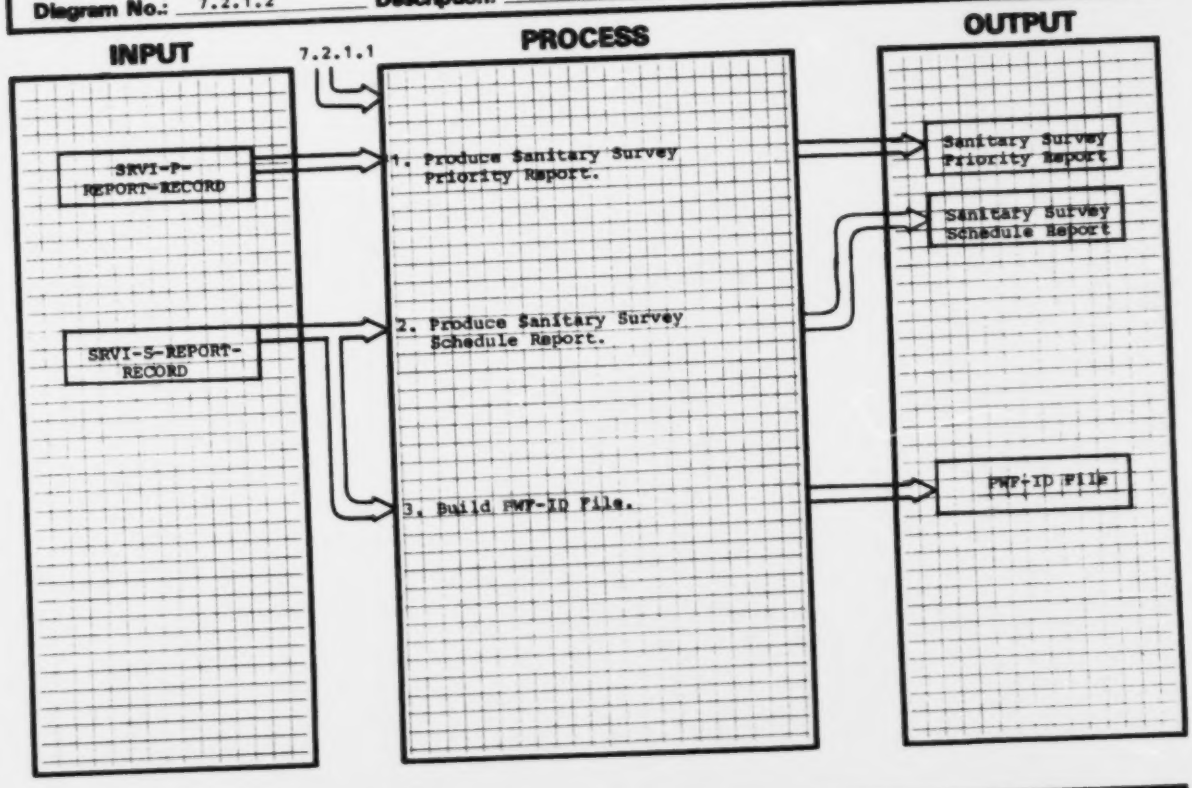


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	Move SRVI-SH-REPORT-TITLE to the Report Title field in the fourth header Line.		SRVY020	204 206 PWSI. 215
2	The Processing Options File consists of only one record. This record is constructed as follows: Move SRVI-SH-CURRENT-DATE to PWFI-PROC-DATE. Move "PROC" to PWFI-PROC-ID. Move "N" to PWFI-NEW-RECORDS, PWFI-INCOMPLETE-RECORDS, PWFI-STATUS-REQUESTS, and PWFI-UNSUCCESS-UPDATE If SRVI-SH-PWFI-REPORT-OPTION equals "2" or "3", move "Y" to PWFI-SELECTION-EXTRAC; otherwise move "N" to PWFI-SELECTION-EXTRAC. PWFI-REPORT-OPTION is created as follows: If SRVI-SH-PWFI-REPORT-OPTION equals "1", then use space. If "2", then use "Y". If "3", then use "N".			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Sanitary Survey Date: 8-1-77 Page: 1 of 2

Diagram No.: 7.2.1.2 Description: Produce Detail lines



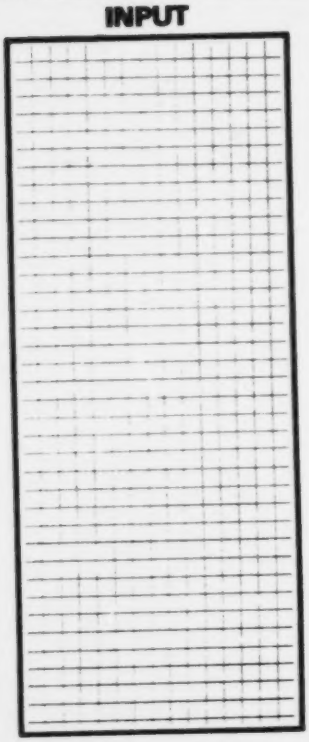
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Produce report detail lines for the Priority Report as follows: Move the fields from the Survey Report Record to the corresponding fields on the report layout. Convert last Survey Date from Julian format (YYDDD) to Calendar format (MMDDYY). If SRVI-R-SOURCE-CODE equals "G", then move "GROUND" to the Type Source field. If SRVI-R-SOUCE-CODE is equal to anything else, then move "SURFACE" to the Type Source field. The following limitation will be observed: a) If the Schedule Report has been selected along with Priority Option 1 or Priority Option 2, then only process as many records as are specified in the Surveying Capacity. If Priority Option 3 has been selected, then the input file will be in sequence by Region/District. Each Region will have a specified number of records to be printed. This number is shown in SRVI-PH-DISTRIBUTION-FACTOR. Do not process more records for each Region than is shown in this distribution factor.		SRVY020	203 205 300

MODEL STATE INFORMATION SYSTEM

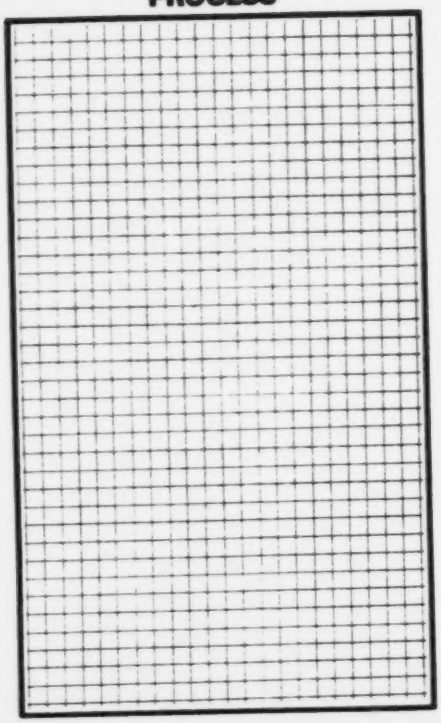
Diagram Type: Detail Subsystem: Sanitary Survey Date: 4-1-77 Page: 2 of 2

Diagram No.: 7.2.1.2 Description: Produce Detail Lines

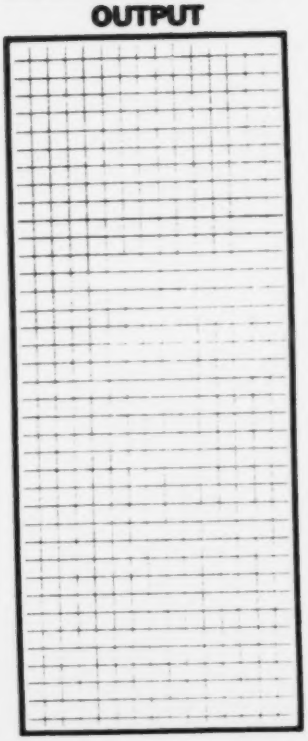
INPUT



PROCESS



OUTPUT

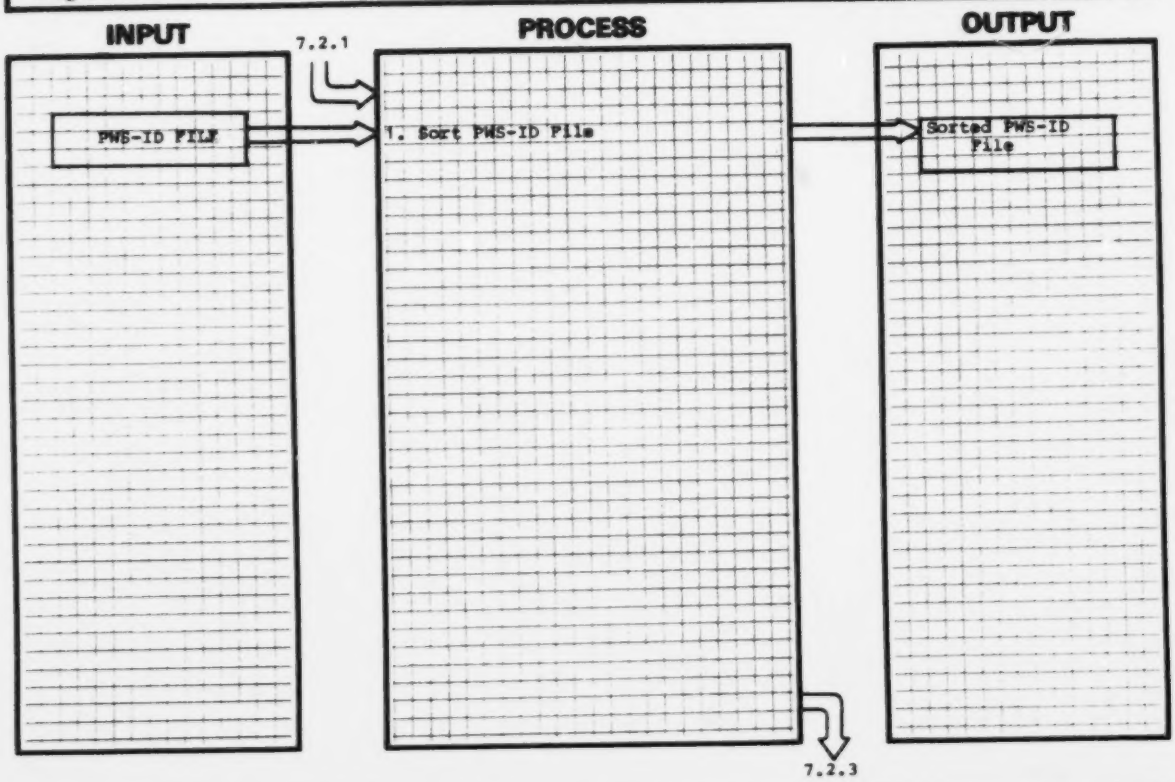


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
2	Produce report detail lines for the Schedule Report in the same manner as the Priority Report with the following exceptions: a) For Priority Option 1 and Priority Option 2, only process as many records as are specified in the Surveying Capacity. b) If the Schedule Report was not requested, bypass this step.		SRVY020	206 301
3	Build a temporary file that contains only those PWS-ID numbers that were written on the Schedule Report. If the Schedule Report was not requested, bypass this step.		SRVY020	205 206

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Sanitary Survey **Date:** 4-1-77 **Page:** 1 of 1

Diagram No.: 7.2.2 **Description:** Sort PWS-ID FILE

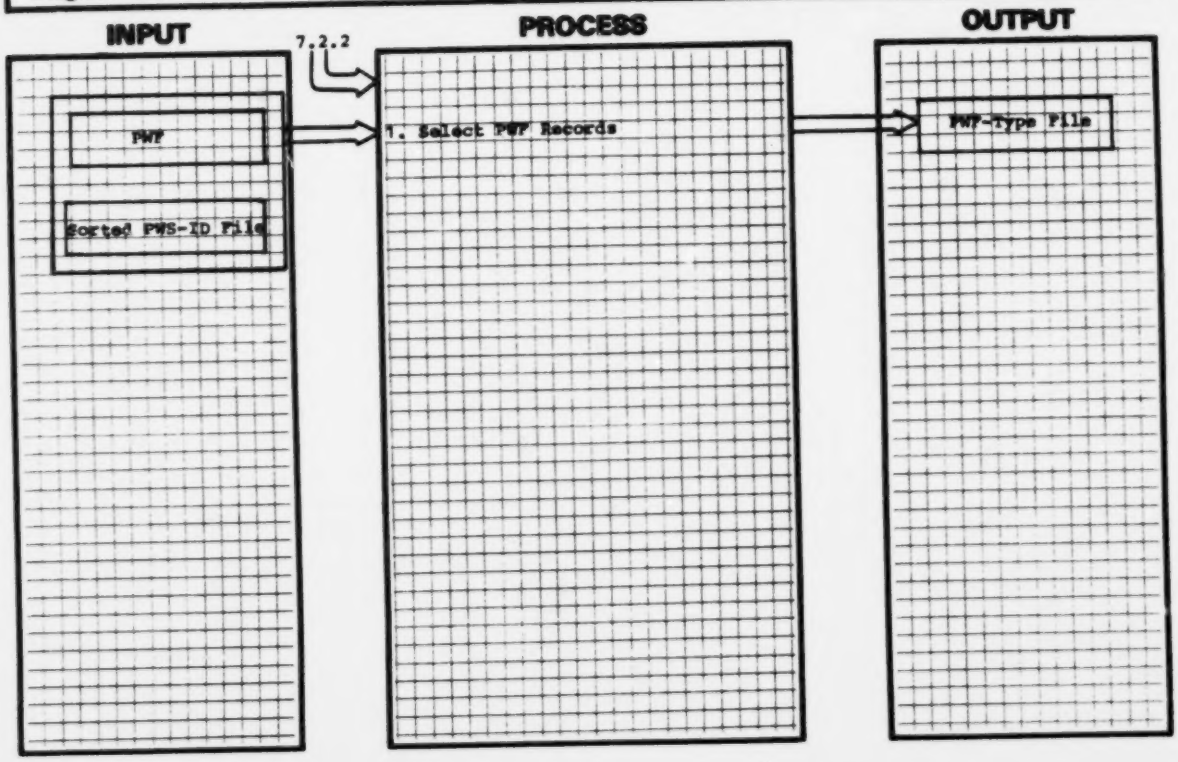


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The PWS-ID File is sorted into ascending sequence for use as selection criteria for the Public Water File (PWF)-Type File. If the Schedule Report was not requested, bypass this step.		SRVY020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Sanitary Survey Date: 4-1-77 Page: 1 of 1

Diagram No.: 7.2.3 Description: Select PWF-Type File Records



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1.	Read a Public Water File (PWF) record. Compare PWF-ID to the PWS-ID numbers in the sorted PWD-ID File. If there is a match, then the PWF record will be written to the PWF-Type File. If the Schedule Report was not requested, bypass this step.		SKVY020	PWSI. 200

I. Operator and Mailing Subsystem (OPER)

1. General Description

The Operator and Mailing Subsystem (OPER) is an optional subsystem designed for two purposes: first, to provide management with data concerning certified operators, and second, to provide the state with the capability to manage a mailing distribution list for mailing material to local governments, cities, consulting engineers, etc. Since the mailing list and operator data requirements are similar, these two functions are combined in a single subsystem.

2. OPER Visual Table of Contents

Operator and Mailing Subsystem 8
Update OMF .1
Seledt From OMF .2
Edit Processing Options .2
Build Internal DET .1
Produce Operators Reports .3
Select OMF Records .3
Build Selected OMF Report Records .4
Produce Standard Selection Statistics Report .5
Produce Mailing Reports .4
Produce Mailing Labels .5
Produce State Defined Reports .6
Edit Processing Options .1
Build Internal CVT .2
Edit Input Trans-actions .3
Update OMF .4
Produce Standard Update Statistics Report .5
LEGEND
Date Flow
Entries and Exits
Multiple I/O Reference
VISUAL TABLE OF CONTENTS
8 Operator and Mailing Subsystem
8.1 Update Operator and Mailing File (OMF)
8.1.1 Edit Processing Options
8.1.2 Build Internal Code Value Table (CVT)
8.1.3 Edit Input Transactions
8.1.4 Update Operator and Mailing File (OMF)
8.1.5 Produce Standard Update Statistics Report
8.2 Select from Operator and Mailing File (OMF)
8.2.1 Build Internal Data Element Table (DET)
8.2.2 Edit Processing Options
8.2.3 Select Operator and Mailing File (OMF) Records
8.2.4 Build Selected Operator and Mailing File (OMF) Report Records
8.2.5 Produce Standard Selection Statistics Report
8.3 Produce Operators Report
8.4 Produce Mailing Reports
8.5 Produce Mailing Labels
8.6 Produce State Defined Reports

Diagram Type: VTOC

Diagram Number: 8

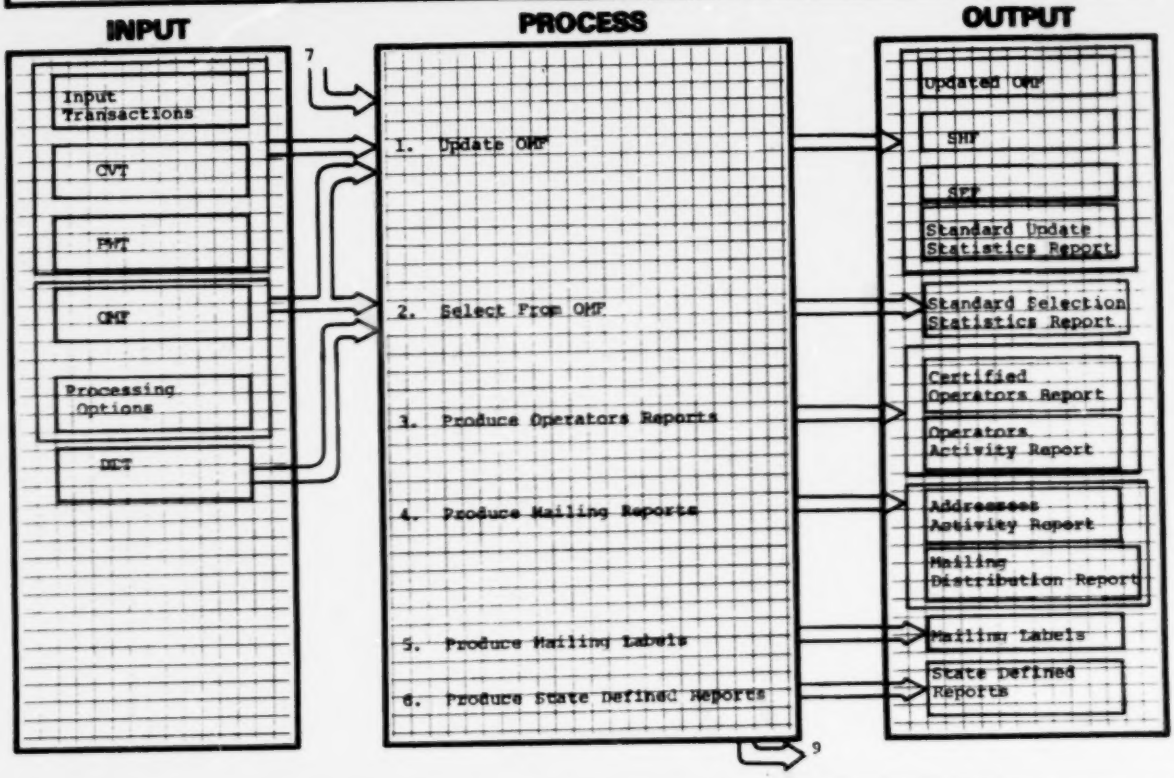
Subsystem: Operator and Mailing

Description: Operator and Mailing Subsystem VTOC

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 **of** 1

Diagram No.: 8 **Description:** Subsystem Overview



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Update the Operator and Mailing File (OMF).	8.1	OPER010	
2	Select OMF Records for Operator and Mailing Reports. These records will be written to a work file.	8.2	OPER020	
3	Produce the Certified Operators Report or the Operators Activity Report from an externally sorted work file.	8.3	OPER030	
4	Produce the Mailing Distribution Report or the Addressees Activity Report from an externally sorted work file.	8.4	OPER040	
5	Produce the Mailing Labels from an externally sorted work file.	8.5	OPER050	
6	Produce State defined reports. These reports were identified by American Management Systems Inc. in the General Systems Design as being designed and programmed by individual States, Territories or EPA regions that needed additional reports beyond what has been provided.	8.6		

NARRATIVE

SUBSYSTEM: Operator and Mailing
PROGRAM NAME: OPER010
DATE: 1-18-77

I. OBJECTIVES:

The primary objective of this program is to update and maintain the Operator and Mailing File (OMF). Secondary objectives are to produce records for the Standard History File; to report errors found in OMF update transactions by producing records for the Standard Error File (SEF); and to build report files that will include new OMF records, incomplete OMF records, and deleted OMF records.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Operator and Mailing File	OMF-RECORD		OPER.200
2.	Code Value Table	CVT-RECORD		MSIS.206
3.	Input Transactions	OMFI-NAME-RECORD	OPER.100	OPER.201
		OMFI-ADDRESS-RECORD	OPER.100	OPER.202
		OMFI-OPERATOR-RECORD	OPER.100	OPER.203
		OMFI-CREATION-DELETION-RECORD	OPER.100	OPER.204
4.	Public Water Table	PWT-RECORD		PWSI.201
		PWT-HEADER-RECORD		PWSI.234

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	OMFI-OM10-PROC-RECORD	OPER.101	OPER.209

III. OUTPUTS:

A. Record Layouts:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Operator and Mailing File	OMF-RECORD		OPER.200
2.	Standard History File	SHF-RECORD		MSIS.202
		MSI-PROC-SHF-RECORD		MSIS.203
3.	Standard Error File	SEF-RECORD		MSIS.207
		MSI-PROC-SEF-RECORD		MSIS.208
4.	Operators Report File	OMFI-OPERATORS-REPORT-RECORD		OPER.205
		OMFI-OPERATORS-DATE-RECORD		OPER.207
5.	Distribution Report File	OMFI-DISTRIBUTION-RECORD		OPER.206
		OMFI-DISTRIBUTION-DATE-RECORD		OPER.208

B. Report Layouts:

	NAME	RECORD NAME	FORM	EXHIBIT LAYOUT
1.	Standard Update Statistics Report			MSIS.300 MSIS.309

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Processing Options are read and edited.

2. The Code Value Table (CVT) is read and an internal CVT is built which is used to edit fields in the input transactions.

3. Input transactions are read and edited after previously being sorted by Addressee Identification and Transaction Code. Transactions in error are written to the Standard Error File (SEF).

4. Valid transactions are applied to the Operator and Mailing File (OMF). If an Add transaction matches a record already on the OMF, it and all other input transactions with the same Addressee ID are written to the Standard Error File (SEF). For all other Add transactions special processing occurs before creating a new record on the OMF. This special processing consists of checking incoming transactions to insure that the OMF record to be created will contain a complete address. If not, the OMF record is not created and an incomplete record is written to the Distribution Report File or the Operators Report File, depending upon the record type. If a complete address is present then a new OMF record is created and a new record is written to the Distribution Report File or the Operators Report File, once again, depending upon the record type. Change and Delete transactions that do not match existing OMF records are written to the Standard Error File (SEF). When an OMF record is updated, a Standard History File (SHF) record is written. After a record has been updated, the data element LAST-UPDATE-DATE is modified. When a record is deleted from the OMF, a Delete record is written to the Distribution Report File or to the Operators Report File, depending upon the record type.

5. The Standard Update Statistics Report is produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

1. Processing Options

2. Operator and Mailing File (OMF) Record Creation and Maintenance Form

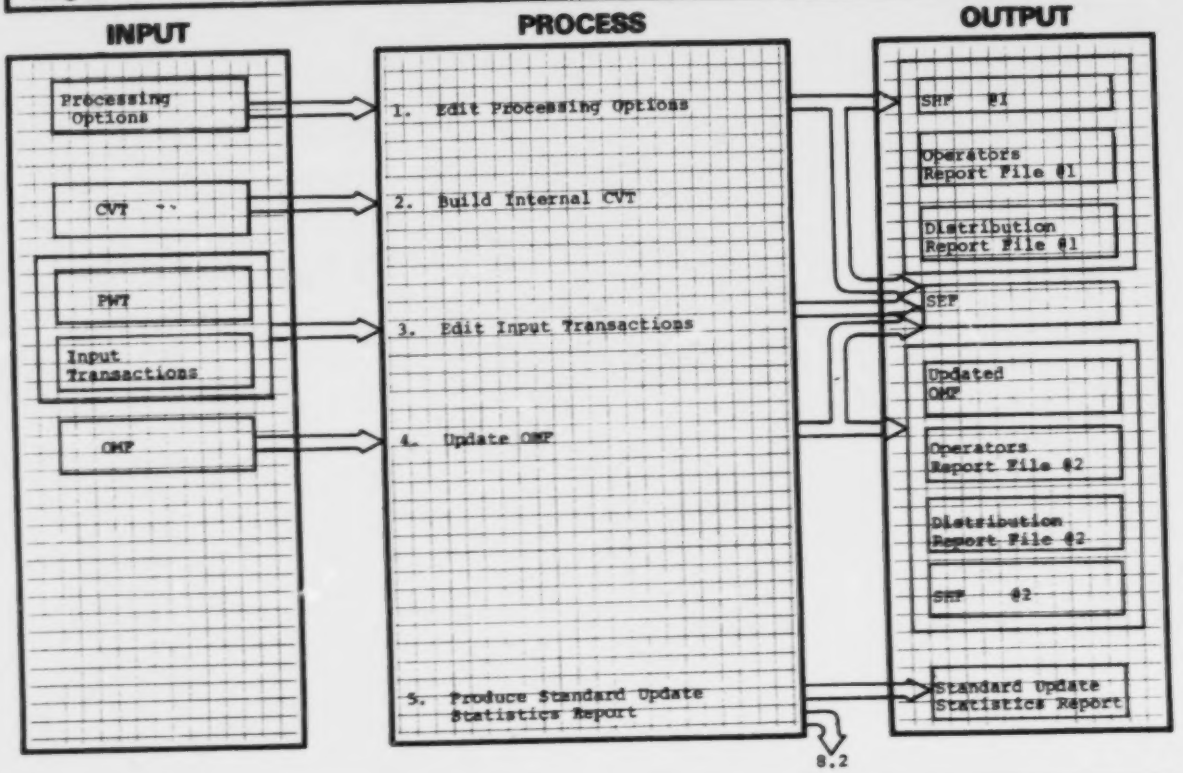
B. Data Element Descriptions:

1. Operator and Mailing File

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Operator and Mailing Date: 2-3-77 Page: 1 of 1

Diagram No.: 8.1 Description: Update OMF

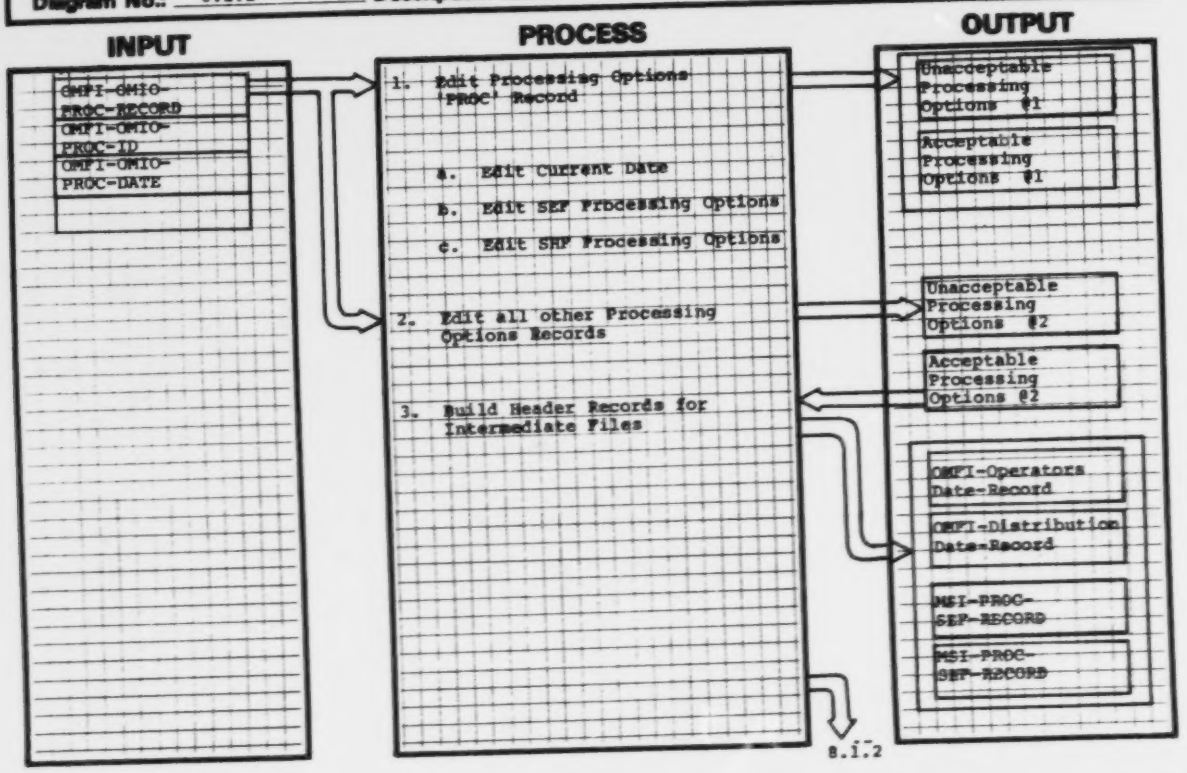


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Processing Options for this program are edited and header records are built for the intermediate files.	8.1.1	OPER010	
2	An Internal Code Value Table (CVT) is built from the CVT.	8.1.2	OPER010	
3	Input Transactions (Presorted by addressee identification number and transaction code) are read and edited. Errors are written to the Standard Error File (SEF).	8.1.3	OPER010	
4	The Operator and Mailing File (OMF) is updated according to the input transactions. Errors are written to the SEF for error processing. Updates cause Standard History File (SHF) records to be built. Deleted OMF Operator records are written to the Operators Report File. Deleted OMF Addressee records are written to the Distribution Report File.	8.1.4	OPER010	
5	The Standard Update Statistics Report is produced.	8.1.5	OPER010	
	Note: Error codes are located in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Operator and Mailing Date: 2-3-77 Page: 1 of 2

Diagram No.: 8.1.1 Description: Edit Processing Options



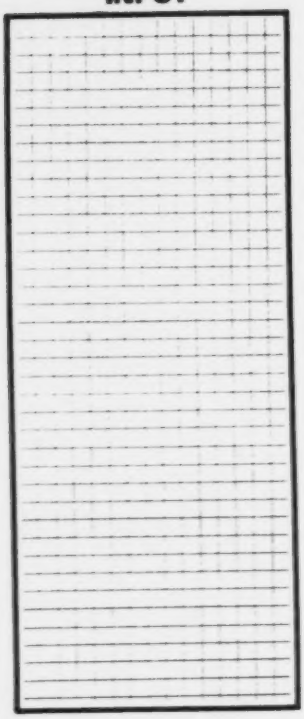
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Record with 'PROC' in positions 1-4 as follows: a. Edit the current date (OMFI-OMIO-PROC-DATE). If it is invalid, then processing will be terminated. If it is valid, convert it to Julian mode for later use. b. Edit the Standard Error File (SEF) Processing Options. Both should be "Y" or "N". If there is an invalid entry in one or both fields then default to "N" for the invalid entry. c. Edit the Standard History File Processing Options. Valid options are "1" through "4". If the entry is invalid, default to "1". If no 'PROC' records exist or if multiple 'PROC' records exist, processing will be terminated.		OPER010	101 209
2	Edit all other Processing Options Records. All of these records are in error and processing should be terminated.		OPER010	101 209

MODEL STATE INFORMATION SYSTEM

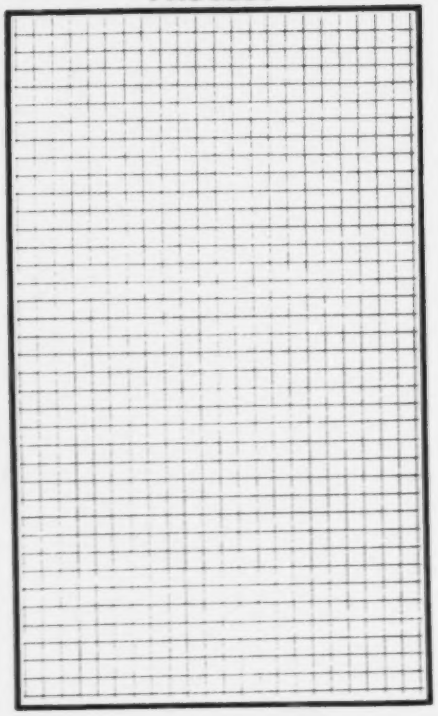
Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 2 **of** 2

Diagram No.: 8.1.1 **Description:** Edit Processing Options

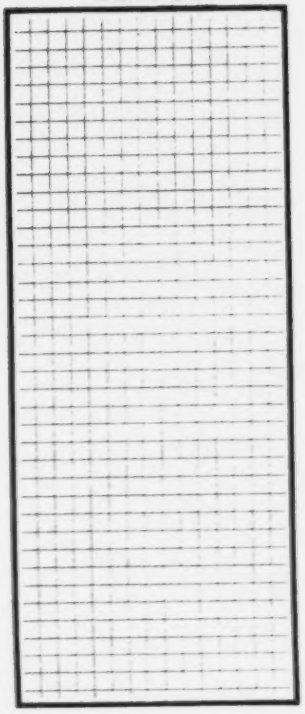
INPUT



PROCESS



OUTPUT

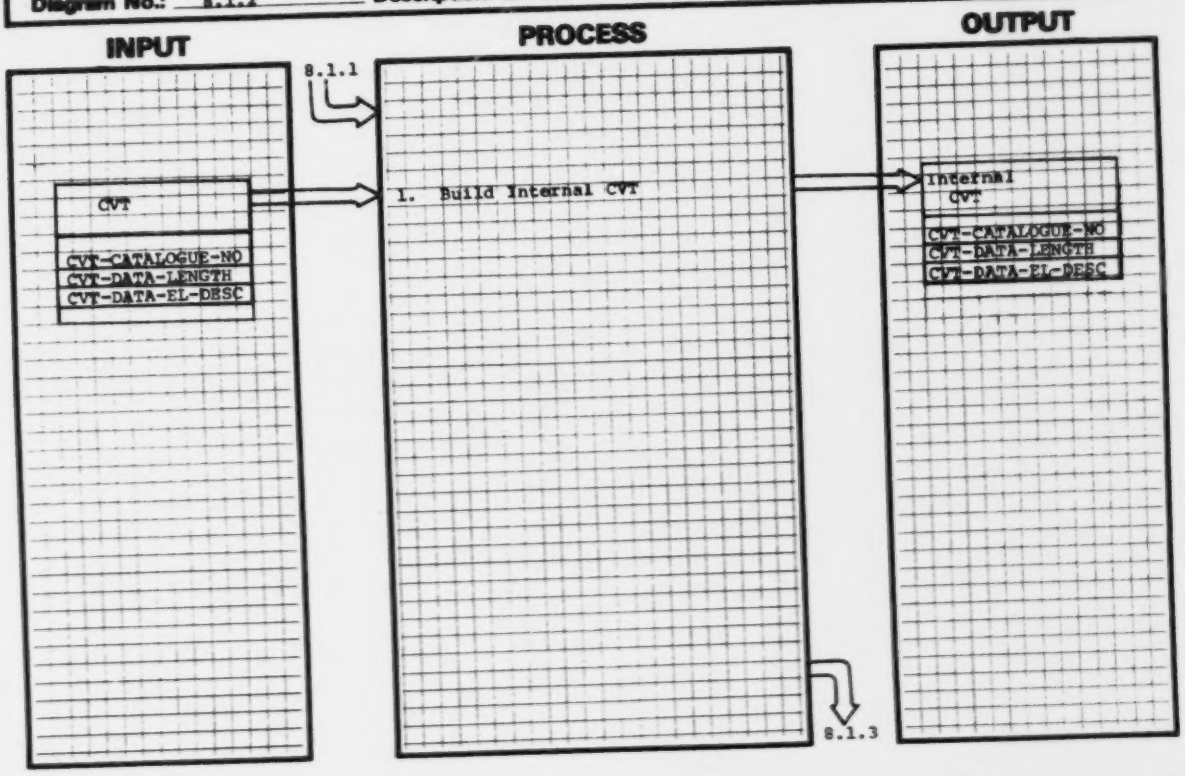


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
3	Build Header Records for the Intermediate Files as follows: a. For the Standard Error File (SEF) and Standard History File (SHF) Proc Records, use 'LOW VALUES' for PROC-ID and 'OM' for File ID. If processing is to be terminated due to invalid processing options, all fields should be blank except Proc-ID. b. For the Operators Date Record and the Distribution Date Record use low values for the Sort field, the reason, and the Addressee ID. Use the current date from the Processing Options Record for the date field. However, if a report is to be terminated due to invalid Processing Options, use '000000' for the date. c. For the Operators Date Record move 'OPERATORS ACTIVITY REPORT' to OMFI-OD-REPORT-TITLE. Move 'LISTING' to OMFI-OD-HEADER1. Move 'REASON'TO OMFI-OD-HEADER2. d. For the Distribution Date Record move 'ADDRESSEES ACTIVITY REPORT' to OMFI-DD-REPORT-TITLE. Move 'LISTING' to OMFI-DD-HEADER1. Move 'REASON' to OMFI-DD-HEADER2. NOTE: Unacceptable Processing Options and associated error messages are written on the Standard Update Statistics Report. (See HIPO 8.1.5)		OPER010	207 208 MSIS. 208 MSIS. 213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Operator and Mailing Date: 2-3-77 Page: 1 of 1

Diagram No.: 8.1.2 Description: Build Internal CVT

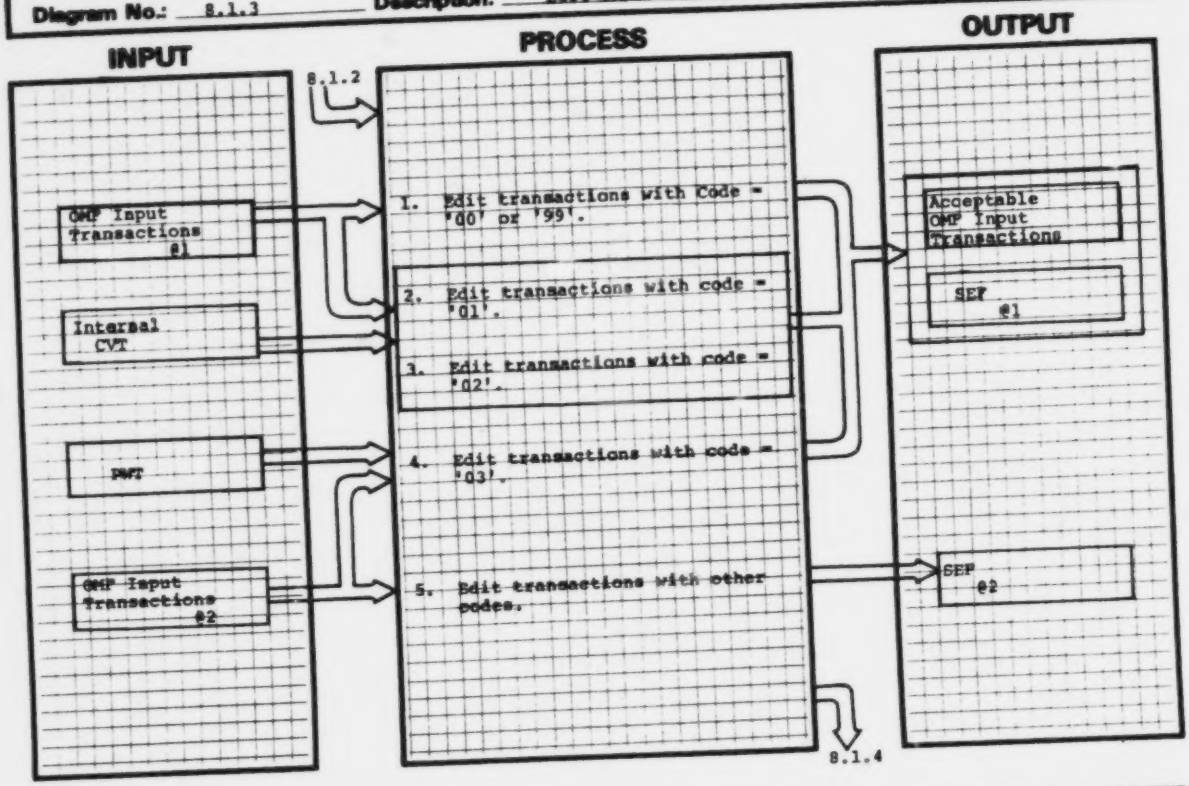


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build an Internal Code Value Table (CVT) of data element values. Appropriate CVT records are stored internally so that they may be used as edit criteria when certain fields are edited. The values are contained in two external CVT files. One has only the values for editing the Operator and Mailing File (OMF) and thus is stored in its entirety. The other has values for common data elements existing in more than one file, some of which pertain to the OMF. Only values for state codes are stored from this common table.		OPER010	MSIS. 206 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 of 1

Diagram No.: 8.1.3 **Description:** Edit Input Transactions

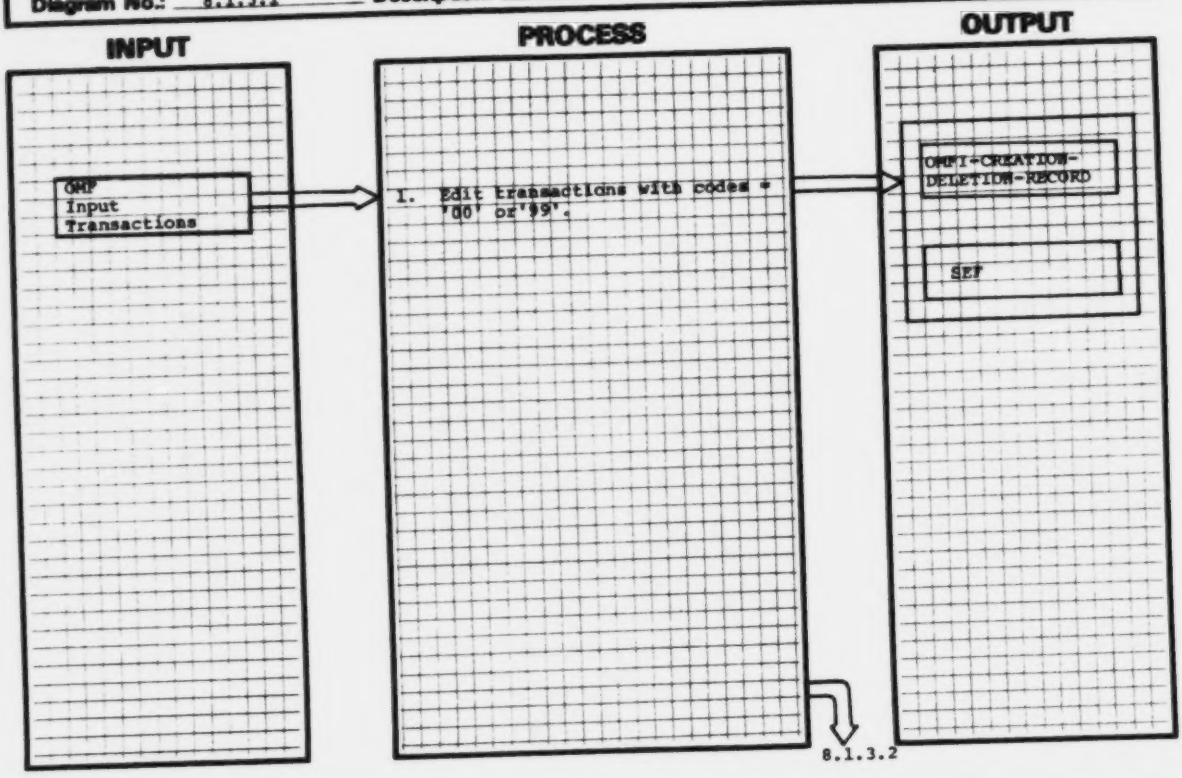


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the transactions with codes of '00' or '99' in positions 6-7.	8.1.3.1	OPER010	
2	Edit the transactions with code '01' in positions 6-7.	8.1.3.2	OPER010	
3	Edit the transactions with code '02' in positions 6-7.	8.1.3.3	OPER010	
4	Edit the transactions with code '03' in positions 6-7.	8.1.3.4	OPER010	
5	Edit the transactions with codes not equal to the previously mentioned codes.	8.1.3.5	OPER010	
	NOTE: All transactions in error generate records for the Standard Error File (SEF). The specific error codes to be used may be found in the Data Element Dictionary (DED).			
	NOTE: The dollar sign ($) in the left most position of an otherwise blank field denotes value reinitialization and is an acceptable value for all elements unless otherwise noted.			
	NOTE: Edit criteria is located in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 **of** 1

Diagram No.: 8.1.3.1 **Description:** Edit Transactions with Code = '00' or '99'

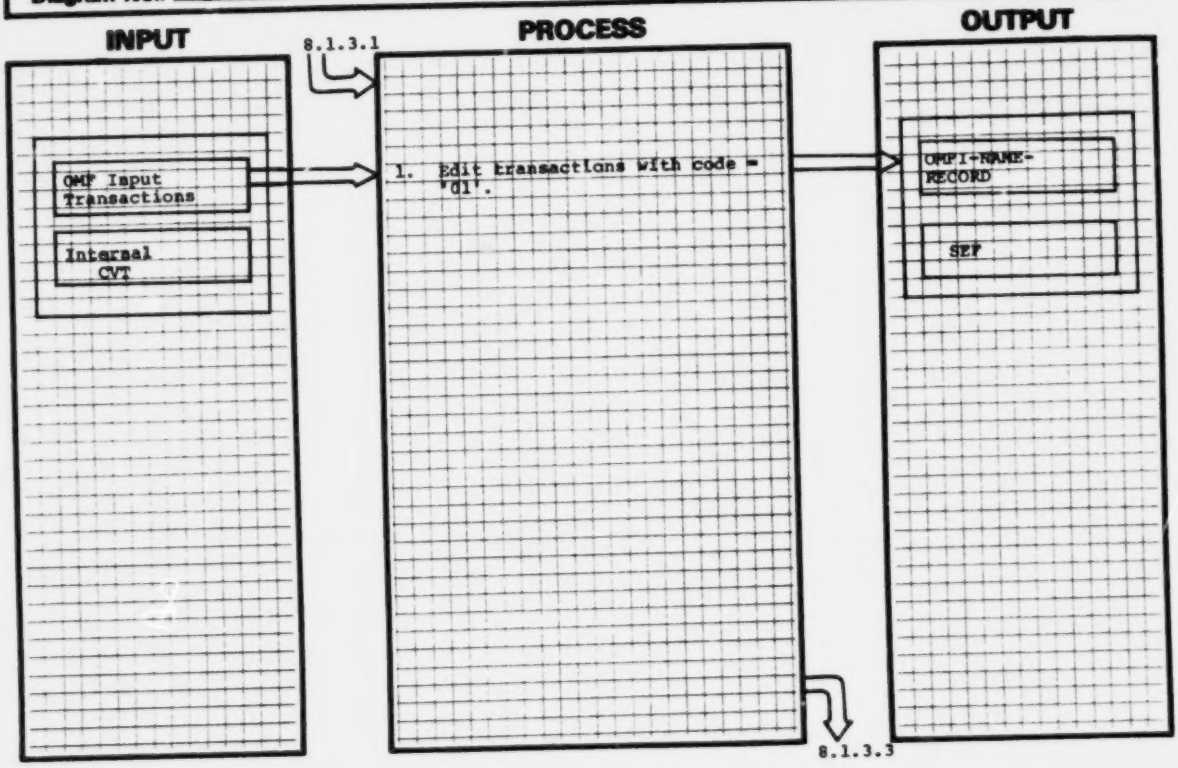


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '00' triggers the creation of a new record for the Operator and Mailing File (OMF). Transaction code '99' causes the deletion of an OMF Record. These transactions are edited as follows: a. The O & M Identification must be a five character alphanumeric string with no special characters. b. The creation-deletion flag in position 8 must be a 'Y'. Transactions in error are written to the Standard Error File (SEF). The actual creation or deletion takes place in the update section of the program (see HIPO 8.1.4.1).		OPER010	204 MSIS. 207 DED 100

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 of 1

Diagram No.: 8.1.3.2 **Description:** Edit Transactions with Code = '01'

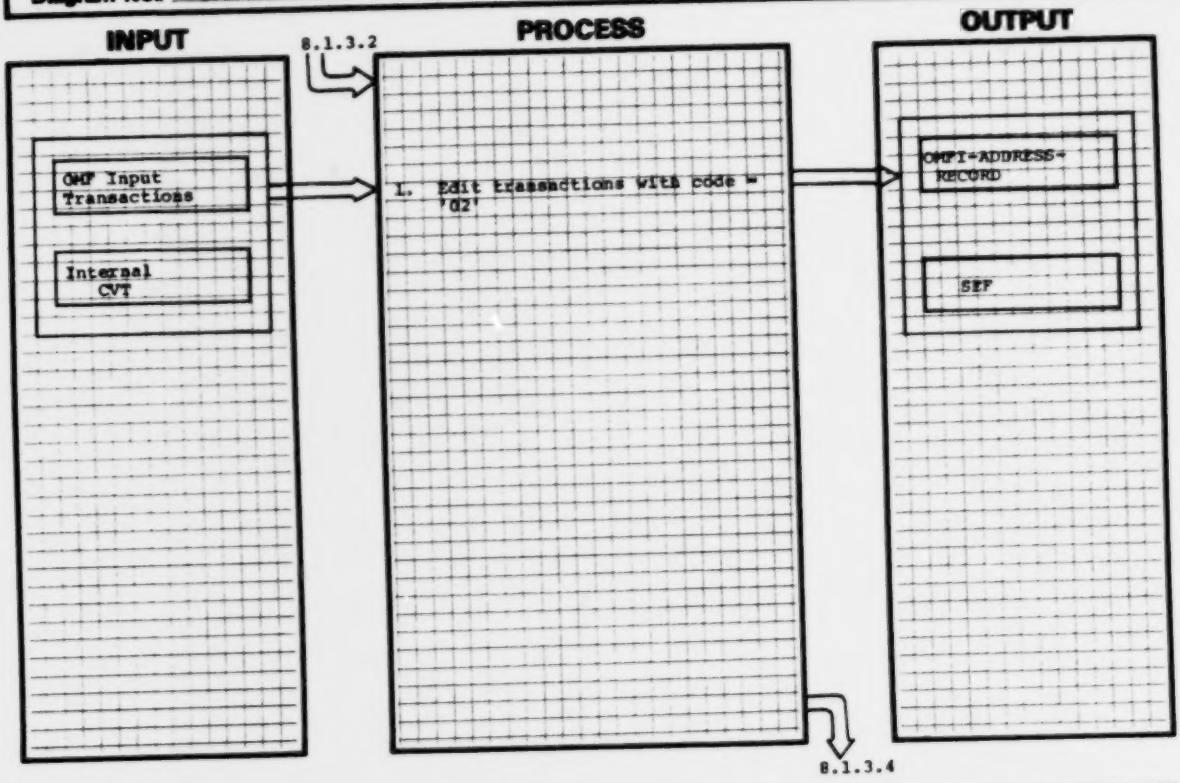


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction adds or updates values relating to a pre-existing Operator and Mailing File (OMF) record. Only non-blank, validated fields will be used to update. This transaction is edited as follows: a. O & M type is checked for validity with the Internal Code Value Table (CVT). If O & M type is zero then it is converted to the letter "O". b. O & M Identification must be a five character alphanumeric string with no special characters. The dollar sign ($) indicating value reinitialization may not be used for this transaction. Transactions in error are written to the Standard Error File (SEF). If a transaction with a code of '00' and the same O & M Identification was previously rejected, then this entire transaction is also rejected.		OPER010	201 MSIS. 206 MSIS. 207 DED /00

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 of 1

Diagram No.: 8.1.3.3 **Description:** Edit Transactions with code = '02'

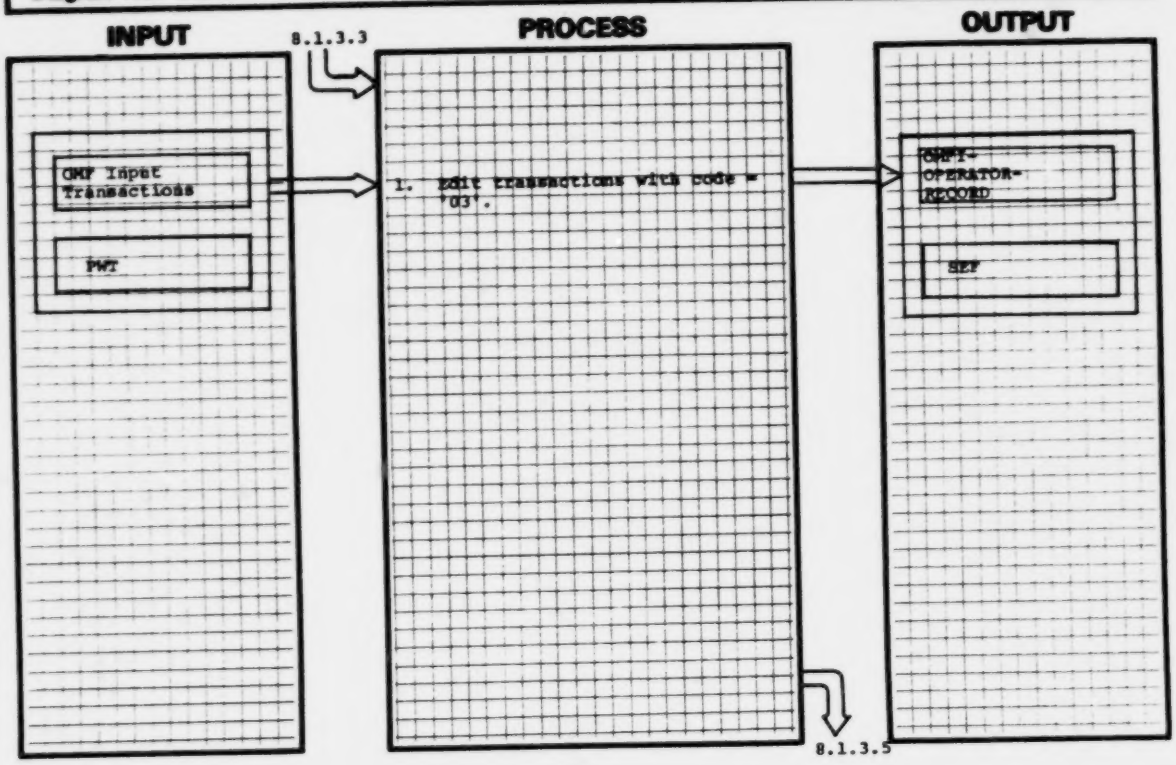


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction adds or updates values relating to a pre-existing Operator and Mailing File (OMF) Record. Only non-blank validated fields will be used to update. This transaction is edited as follows: a. O & M Identification must be a five character alphanumeric string with no special characters. b. State code is checked for validity with the Internal Code Value Table (CVT). c. Zip Code, Area Code, and Phone Number must be numeric. The dollar sign ($) indicating value reinitialization may not be used for zip code, O & M Identification, or State Code. Transactions in error are written to the Standard Error File (SEF). If a transaction with a code of '00' and the same O & M Identification was previously rejected then this entire transaction is also rejected.		OPER010	202 MSIS. 206 MSIS. 207 DED 100

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Operator and Mailing Date: 2-3-77 Page: 1 of 1

Diagram No.: 8.1.3.4 Description: Edit Transactions with Code = '03'

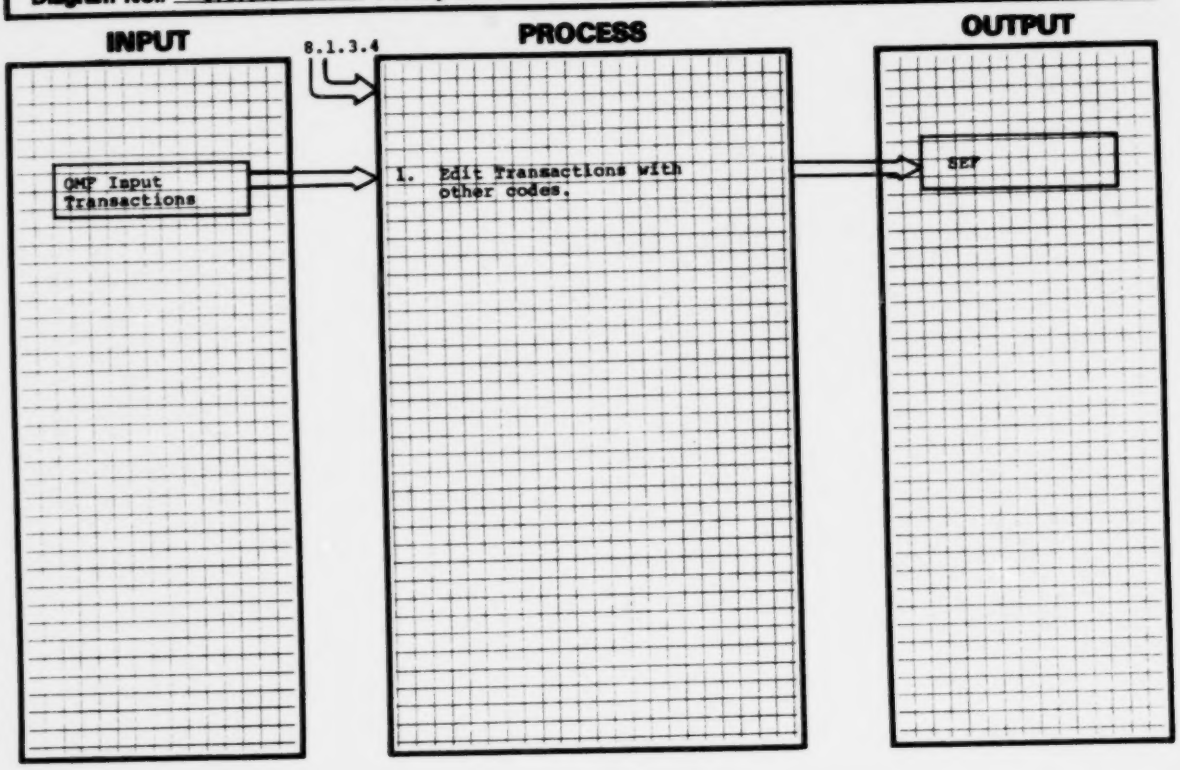


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	This transaction adds or updates values relating to a pre-existing Operator and Mailing File (OMF) Record. Only non-blank validated fields will be used to update. This transaction is edited as follows: a. O & M Identification must be a five character alphanumeric string with no special characters. b. PWS ID is checked for validity with the Public Water Table (PWT). c. Operator Class must be numeric. d. Certificate Renewal date must be a valid date. The dollar sign ($) indicating value reinitialization may not be used for O & M Identification or PWS ID. Transactions in error are written to the Standard Error File (SEF). If a transaction with a code of '00' and the same O & M Identification was previously rejected then this entire transaction is also rejected.		OPER010	203 MSIS. 207 PWSI. 201 DED PWSI. 234 100

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 of 1

Diagram No.: 8.1.3.5 **Description:** Edit Transactions with other Codes

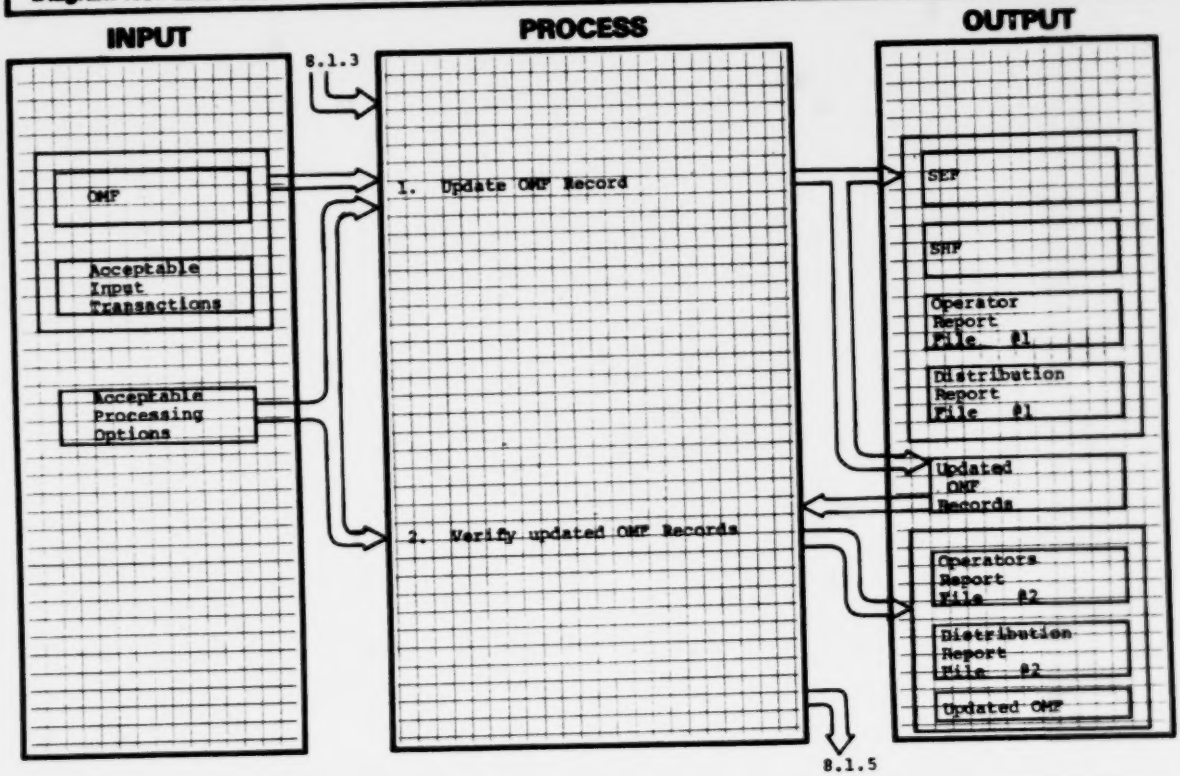


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transactions with codes not equal to those previously mentioned are in error and are written to the Standard Error File (SEF). (Error Code = 017, Catalogue Number = 903)		OPER010	MSIS. 207

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Operator and Mailing Date: 2-3-77 Page: 1 of 1

Diagram No.: 8.1.4 Description: Update OMF

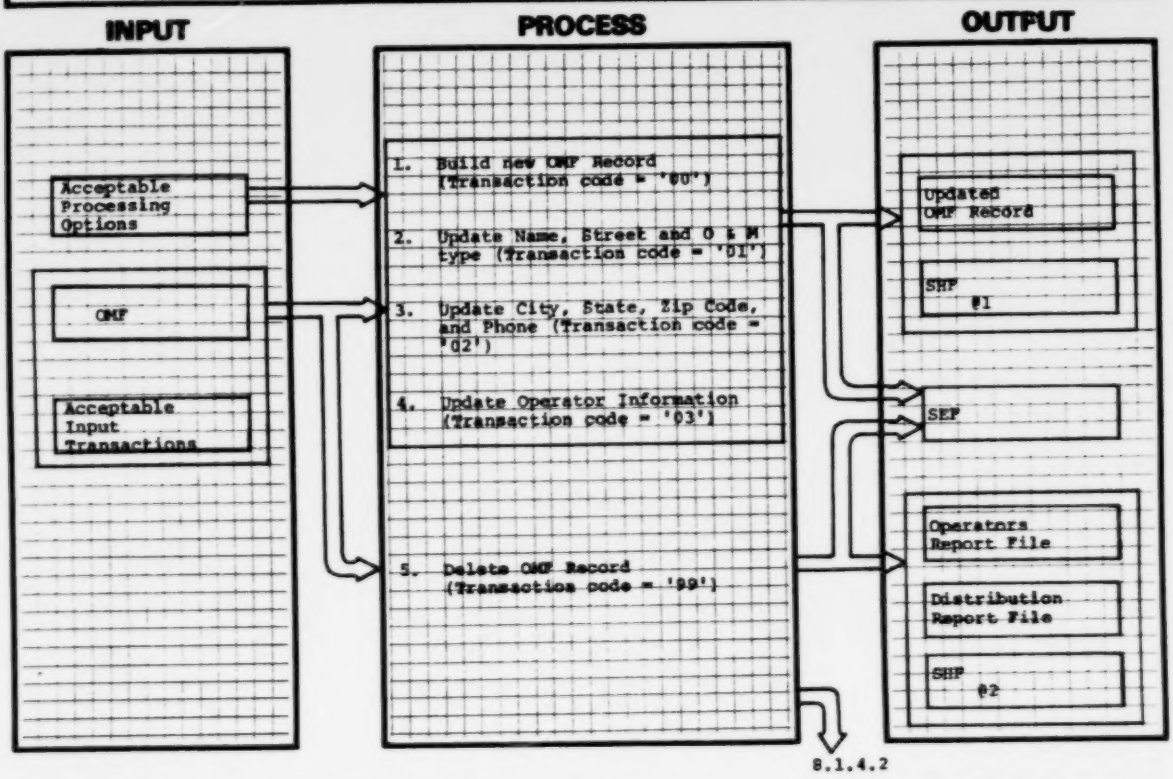


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Do the actual update of the Operator and Mailing File (OMF) records according to the accepted input transactions. Deleted operator records are written to the Operators Report File. Deleted addressee records are written to the Distribution Report File.	8.1.4.1	OPER010	
2	Verify all updated records for completeness. Incomplete operator records and new operator records are written to the Operators Report File. Incomplete addressee records, and new addressee records are written to the Distribution Report File. If a record was not updated, verification is bypassed.	8.1.4.2	OPER010	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Operator and Mailing Date: 2-3-77 Page: 1 of 1

Diagram No.: 8.1.4.1 Description: Update OMF Record

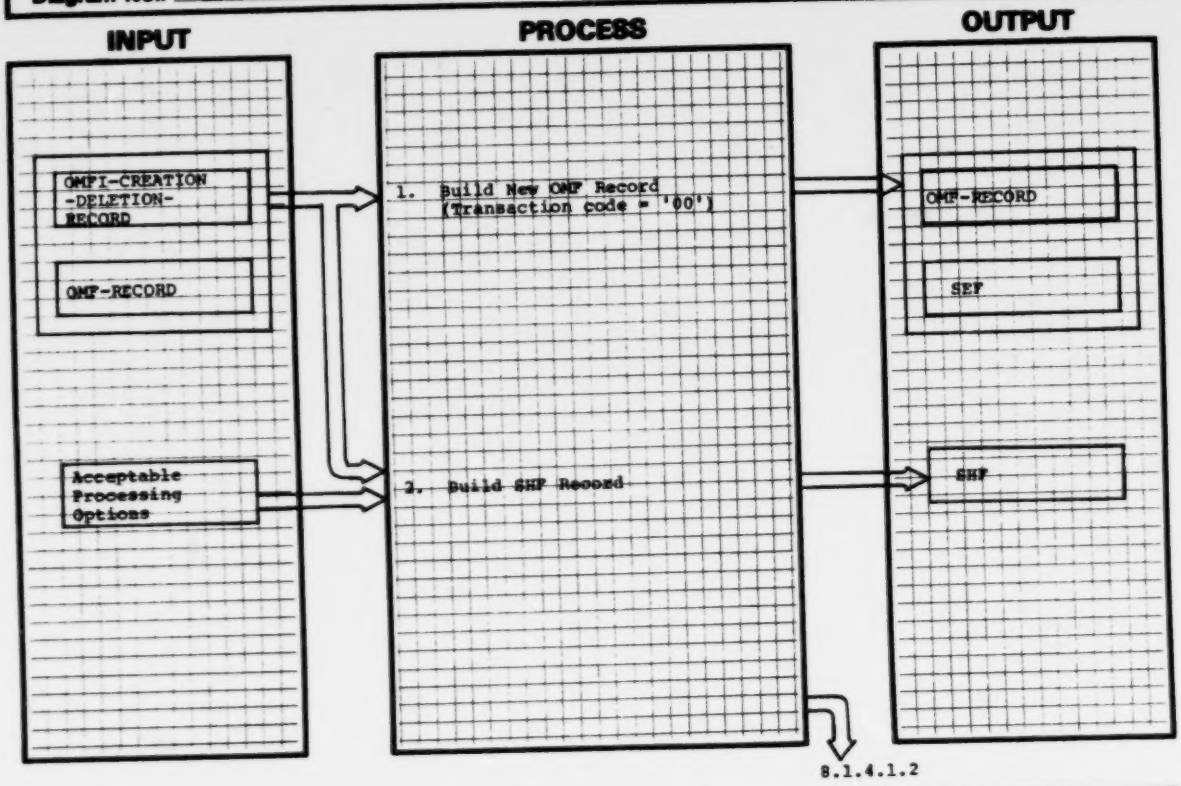

INPUT
PROCESS
OUTPUT
Acceptable Processing Options
OMF
Acceptable Input Transactions
1. Build new OMF Record (Transaction code = '00')
2. Update Name, Street and O & M type (Transaction code = '01')
3. Update City, State, Zip Code, and Phone (Transaction code = '02')
4. Update Operator Information (Transaction code = '03')
5. Delete OMF Record (Transaction code = '99')
Updated OMF Record
SMF #1
SEF
Operators Report File
Distribution Report File
SMF #2
8.1.4.2

STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build a new Operator and Mailing File (OMF) record for Transaction code '00'.	8.1.4.1.1	OPER010	
2	Update OMF information for Transaction code '01'.	8.1.4.1.2	OPER010	
3	Update OMF information for Transaction code '02'.	8.1.4.1.3	OPER010	
4	Update OMF Operator information for Transaction code '03'.	8.1.4.1.4	OPER010	
5	Delete the OMF record for Transaction code '99'.	8.1.4.1.5	OPER010	
	NOTE: All Transactions in error generate a record in the Standard Error File (SEF). The specific error codes to be used may be found in the Data Element Dictionary (DED).			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 **of** 1

Diagram No.: 8.1.4.1.1 **Description:** Build New OMF Record (Transaction Code = '00')

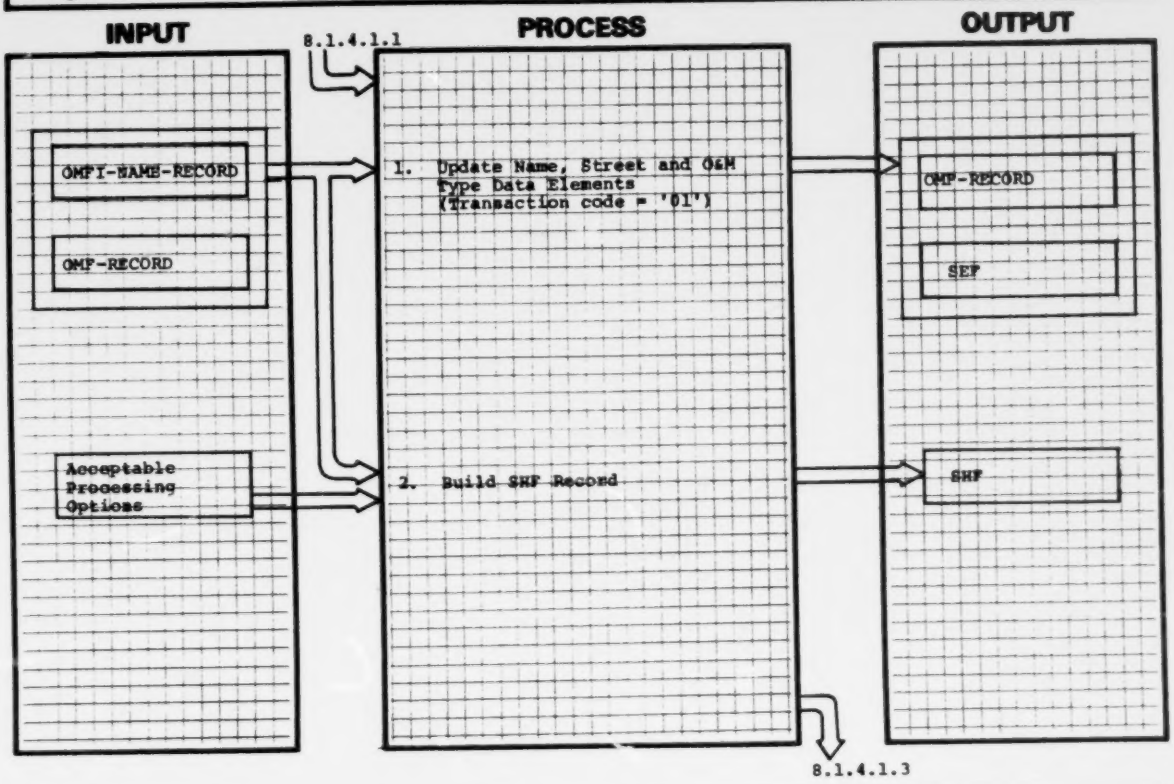


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '00' creates a record for the Operator and Mailing File (OMF). The storage areas are initialized in core and should be filled in by other transactions. All alphanumeric fields should be initialized to blanks. All numeric fields should be initialized to zeros. If the specified Operator and Mailing Identification Number is already on the OMF, the transaction is written to the Standard Error File (SEF). In addition, a Program Control flag is set so that all other transactions with the same identification number will be rejected.		OPER010	200 204 MSIS. 207 DED
2	Build a Standard History File (SHF) Record. Use 'OM' for SHF-FILE-ID, use OMFI-ID01 for SHF-RECORD-ID and for SHF-NEW-VALUE. Use the current date from the 'PROC' record for SHF-CUR-UPDATE-DATE and for SHF-LAST-UPDATE-DATE. Use blanks for SHF-OLD-VALUE. SHF-DATA-ELEMENT-CODE can be obtained from the Data Element Dictionary (DED) for Addressee-ID.		OPER010	200 204 MSIS. 202 DED

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 of 1

Diagram No.: 8.1.4.1.2 **Description:** Update Name, Street, and O&M Type (Transaction Code='01')

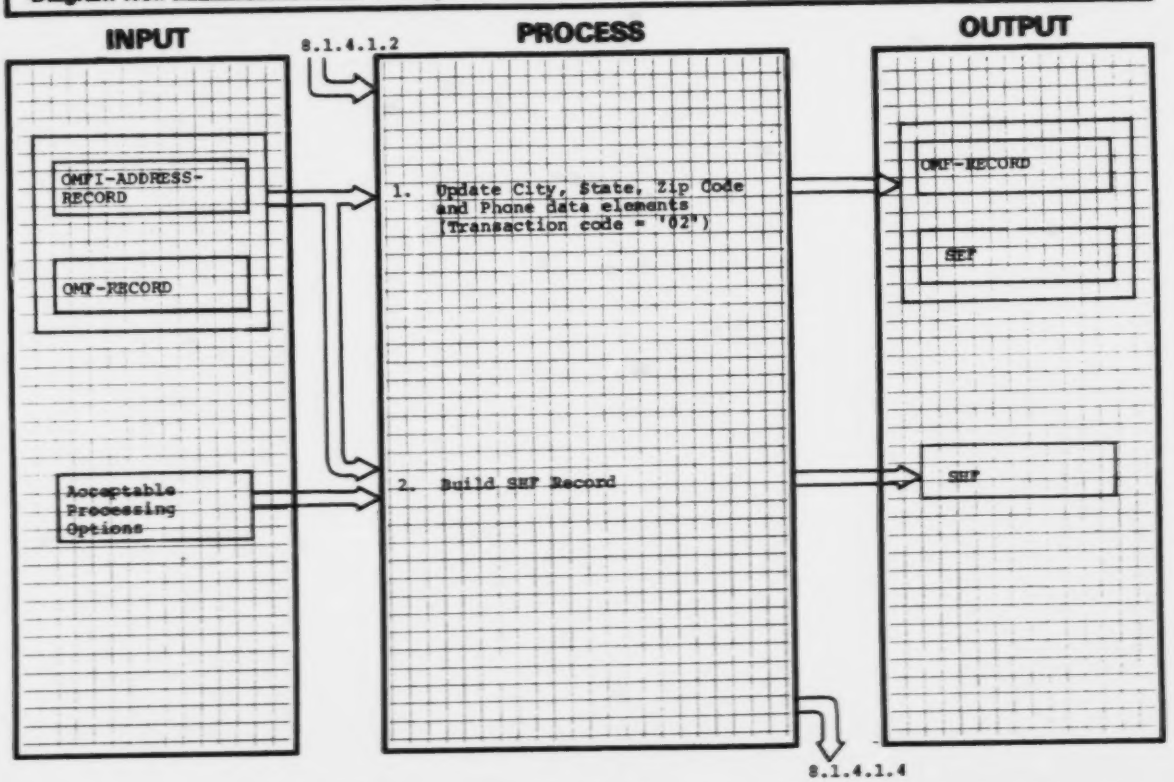


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '01' allows entry or updating of the name and street fields of the Operator and Mailing File (OMF) records. Non-blank fields on the acceptable input transactions are used to replace the corresponding data elements on the OMF record. The dollar sign ($), indicating value reinitialization, is not valid for this transaction. If the Operator and Mailing Identification Number specified on the transaction is not present on the OMF, the entire transaction is in error and is written to the Standard Error File (SEF).		OPER010	200 201 MSIS. 207 DED
2	Build a Standard History File (SHF) Record for each of the updated elements.		OPER010	200 201 MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 of 1

Diagram No.: 8.1.4.1.3 **Description:** Update City, State, Zip and Phone (Transaction code='02')

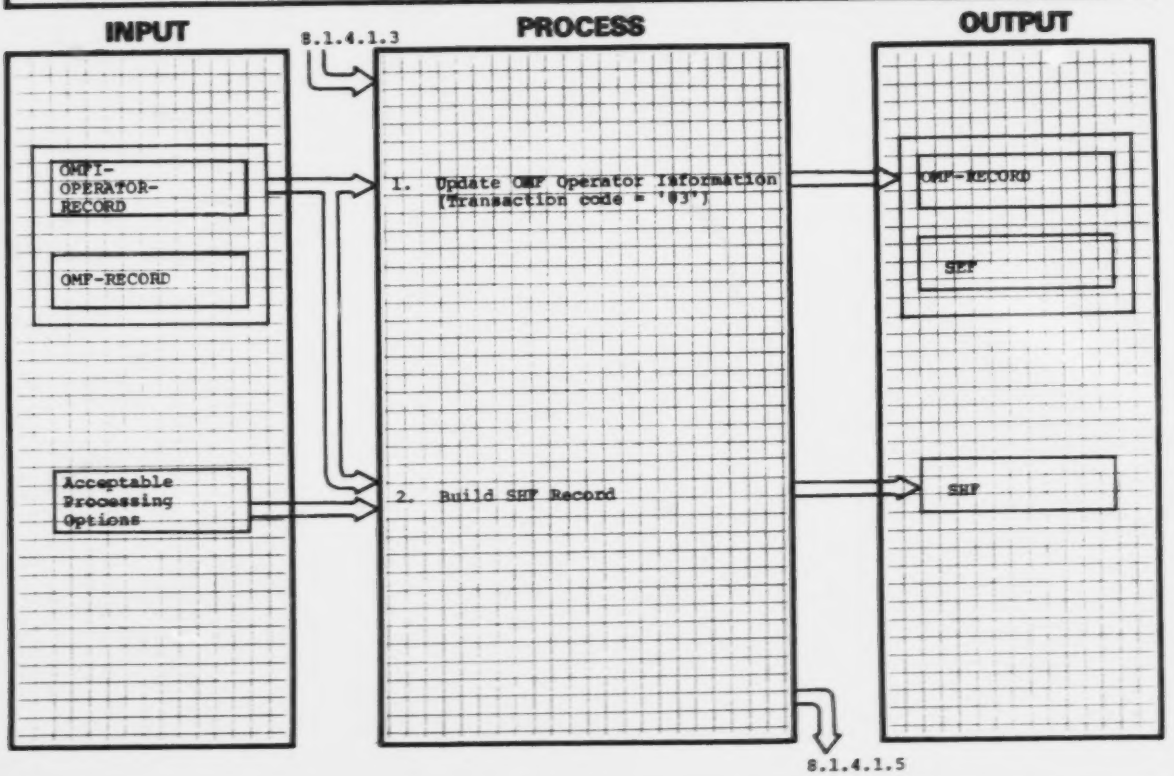


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '02' allows entry or updating of the city, state, zip code and phone data elements of the Operator and Mailing File (OMF) records. Non-blank fields on the accepted input transactions are used to replace the corresponding data elements on the OMF record. The dollar sign ($) indicating value reinitialization is not valid for this transaction except for telephone number. If the Operator and Mailing Identification specified on the transaction is not present on the OMF, the entire transaction is in error and is written to the Standard Error File (SEF).		OPER010	200 202 MSIS. 207 DED
2	Build a Standard History File (SHF) Record for each of the updated elements.		OPER010	200 202 MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 of 1

Diagram No.: 8.1.4.1.4 **Description:** Update Operator Information (Transaction code = '03')

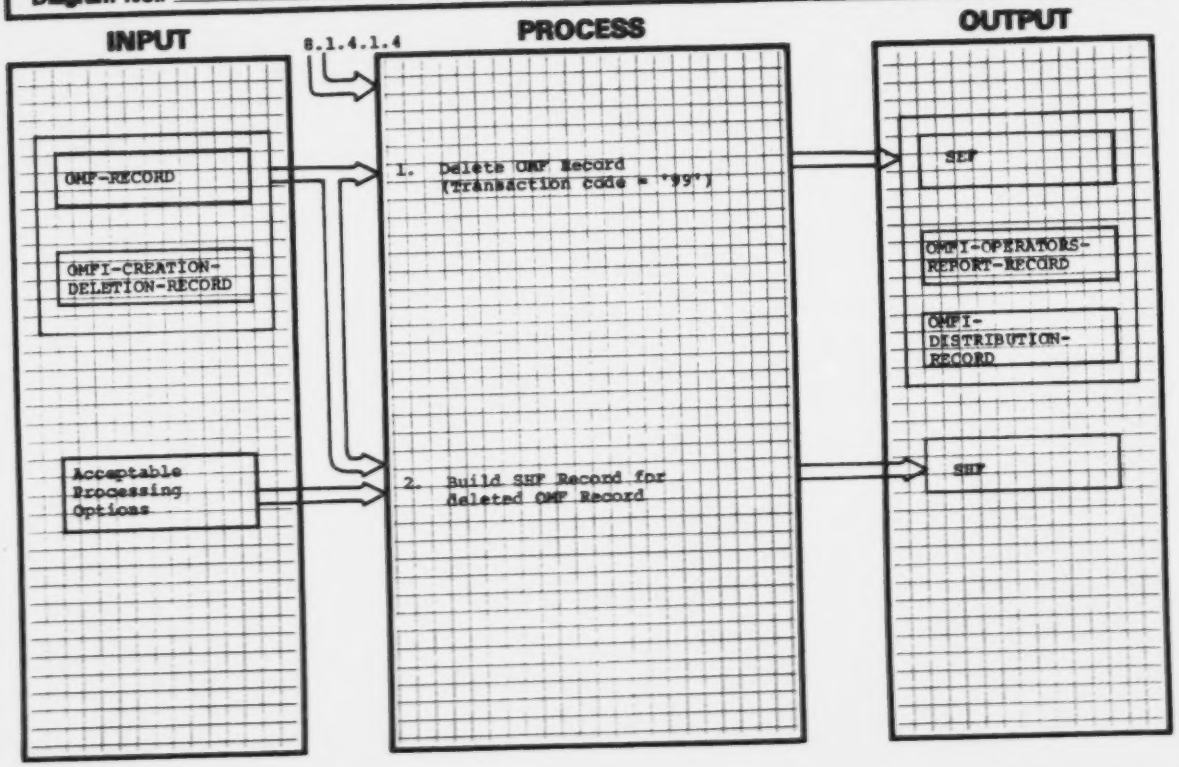


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Transaction code '03' allows updating of the Operator fields of the Operator and Mailing File (OMF) records. Non-blank fields on the acceptable input transactions are used to replace the corresponding data elements on the OMF record. A dollar sign ($) in the left most position of an otherwise blank input transaction field indicates that the corresponding data element on the OMF record should be reinitialized (See HIPO 8.1.4.1.1 for values). If the Operator and Mailing Identification specified on the transaction is not present on the OMF, the entire transaction is in error and is written to the Standard Error File (SEF).		OPER010	200 203 MSIS. 207 DED
2	Build a Standard History File (SHF) record for each of the updated elements.		OPER010	200 203 MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 **of** 1

Diagram No.: 8.1.4.1.5 **Description:** Delete OMF Record (Transaction Code = '99')

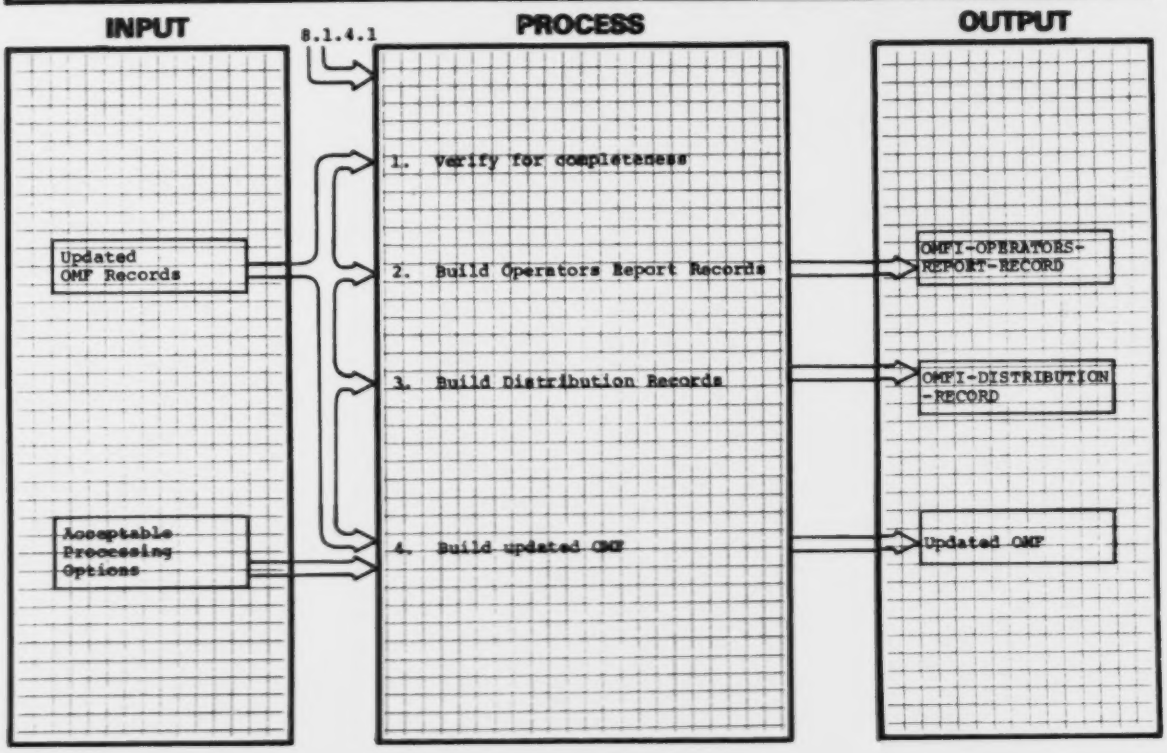


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The effect of Transaction Code '99' is that Program Control flags will be set so that: a. Deleted Operator and Mailing File (OMF) records will be written to the Distribution Report File or to the Operators Report File. b. The current OMF record is not written to the updated OMF. If the specified Operator and Mailing Identification is not present on the OMF, the transaction is in error and is written to the Standard Error File (SEF).		OPER010	200 204 205 206 MSIS. 207
2	A single Standard History File (SHF) record is built for the deleted OMF record. The data element code will be "999" SHF-OLD-VALUE will equal "RECORD DELETED" and SHF-NEW-VALUE will equal blanks.		OPER010	200 204 MSIS. 202

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Operator and Mailing Date: 2-3-77 Page: 1 of 1

Diagram No.: 8.1.4.2 Description: Verify Updated OMF Records

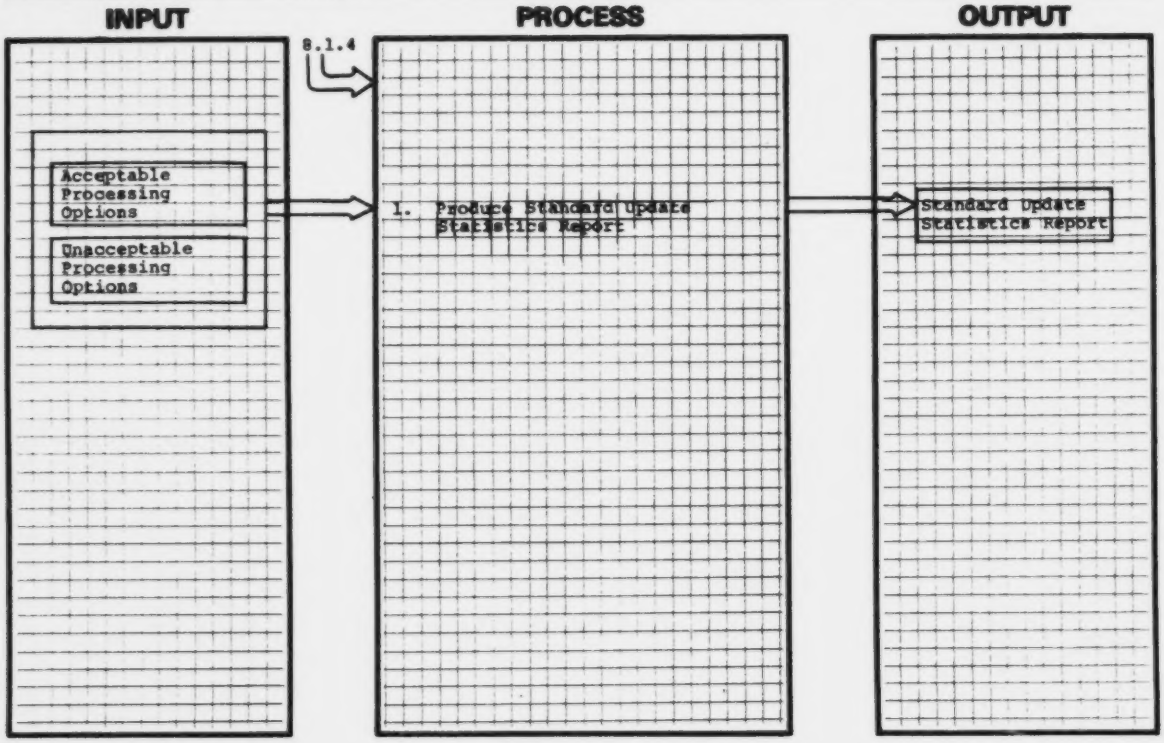


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Each updated Operator and Mailing File (OMF) record is checked to insure that all MSIS required fields are present. If any required fields are missing set program control flags so that: a. Operators Report Records will be produced or Distribution Records will be produced. b. The updated OMF Record will not be written to the updated OMF.		OPER010	200 DED
2	If the updated OMF record is an Operator record (O&M Type=0) and step 1 determined that it was incomplete then move '2' to OMFI-OR-REASON and write the Operators Report Record. If the updated OMF record is a new Operator record, then move '1' to OMFI-OR-REASON and write an Operators Report Record.		OPER010	200 205
3	If the updated OMF record is not an Operator record (O&M type ≠ 0) and step 1 determined that it was incomplete then move'2' to OMFI-DR-REASON and write a Distribution Report Record. If the updated OMF record is a new non-operator record, then move '1' to OMFI-DR-REASON and write a Distribution Report Record.		OPER010	200 206
4	If the updated record is complete, then the record may now safely be written to the OMF. Before writing the updated record be sure to update the last update date field.		OPER010	200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2-3-77 **Page:** 1 of 1

Diagram No.: 8.1.5 **Description:** Produce Standard Update Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Update Statistics Report is always produced. The following two formats may be used: a. The Standard Update Statistics Report contains: 1. Totals which were accumulated during the update process: (a) number of records originally on the file (b) number of acceptable transactions (c) number of error records created (d) number of records modified on the file (e) number of new records added to the file (f) number of records deleted from the file (g) number of records currently on the file 2. Totals d through g computed as a percent of a. b. If any Processing Options records are in error, the record and associated error messages can be produced instead of or in addition to the totals in 1.a.		OPER010	MSIS. 300 MSIS. 309

NARRATIVE

SUBSYSTEM: Operator and Mailing
PROGRAM NAME: OPER020
DATE: February 2, 1977

I. OBJECTIVES:

The objective of this program is to search the Operator and Mailing File and select specific Operator and Mailing records for the Certified Operators Report, the Mailing Distribution Report, Mailing labels, and any other state defined reports based upon given selection criteria.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Operator and Mailing File	OMF-RECORD	OPER.200
2.	Data Element Table	DET-RECORD	MSIS.201

B. Processing Options Records:

	NAME	RECORD NAME	EXHIBIT FORM	EXHIBIT LAYOUT
1.	Processing Options	OMFI-OM20-PROC-RECORD	OPER.102	OPER.210
2.	Sort Options	OMFI-SORT-RECORD	OPER.103	OPER.212
3.	Selection Form (SEL1)	OMFI-SELECT-1-RECORD	OPER.104	OPER.213
4.	Selection Form (SEL2)	OMFI-SELECT-2-RECORD	OPER.105	OPER.214

III. OUTPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Operators Report File	OMFI-OPERATORS-REPORT-RECORD	OPER.205

		OMFI-OPERATORS-DATE-RECORD	OPER.207
2.	Distribution Report File	OMFI-DISTRIBUTION-RECORD	OPER.206
		OMFI-DISTRIBUTION-DATE-RECORD	OPER.208
3.	Mailing Label File	OMFI-MAILING-LABEL-RECORD	OPER.211
		OMFI-LABEL-DATE-RECORD	OPER.215

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Standard Selection Statistics Report	MSIS.306 MSIS.309

C. Turnaround Documents:

Not Applicable

IV. FUNCTIONS:

1. Records from the Data Element Table (DET) with the file ID of "OM" are read and used to build an internal DET.

2. The Processing Options records are read and edited. If any errors are detected, then processing is discontinued.

3. Based on mnemonic names and values from the Processing Options 'SEL1' records and relational operators from 'SEL2' records, Operator and Mailing File (OMF) records are selected for report and mailing label production.

4. For each record that has been selected, a sort key is constructed using information from the 'SORT' Processing Options record, and a selected OMF report record is built.

5. The Standard Selection Statistics Report is produced.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

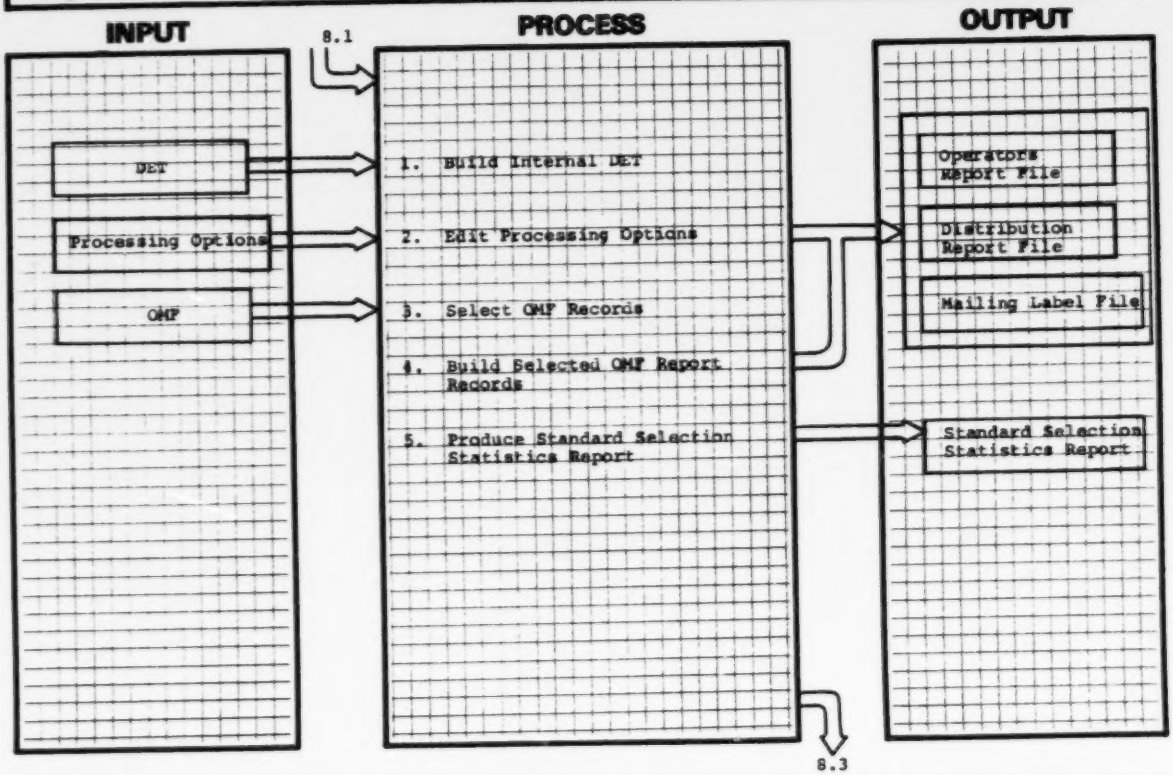
1. Processing Options
2. Sort Options
3. Selection Form--Definition of Data Elements
4. Selection Form--Definition of Logic for Selection

B. Data Element Descriptions:

Not Applicable

MODEL STATE INFORMATION SYSTEM

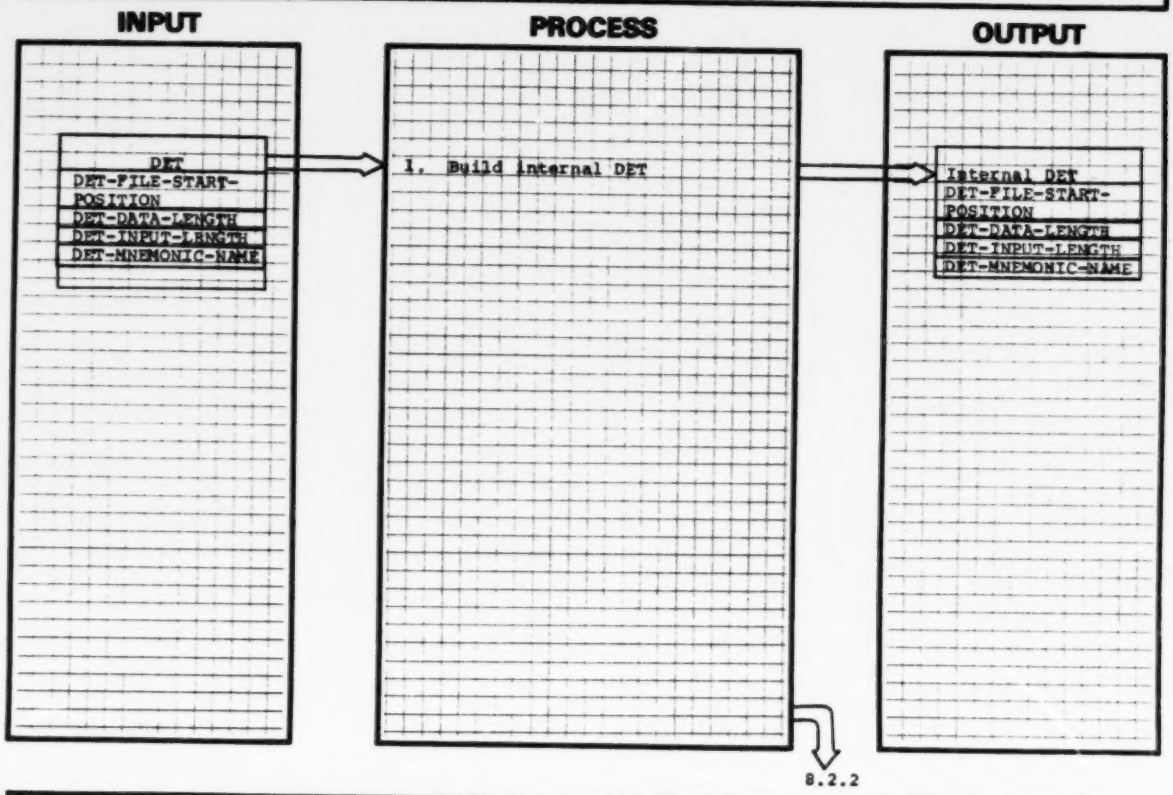
Diagram Type: Overview Subsystem: Operator and Mailing Date: 2/2/77 Page: 1 of 1
Diagram No.: 8.2 Description: Select From OMF



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built.	8.2.1	OPER020	
2	The Processing Options, including 'PROC', 'SEL1', 'SEL2' and 'SORT' records are edited.	8.2.2	OPER020	
3	Records are selected from the Operator and Mailing File (OMF) according to the options contained on the 'SEL1' and 'SEL2' records.	8.2.3	OPER020	
4	If an OMF record is selected, a sort key is built and the record is written to the appropriate report files for processing by OPER030, OPER040 or OPER050.	8.2.4	OPER020	
5	The Standard Selection Statistics Report is produced after all OMF records have been examined. This report shows all the selection criteria, the number of records selected, and any Processing Options in error.	8.2.5	OPER020	

MODEL STATE INFORMATION SYSTEM

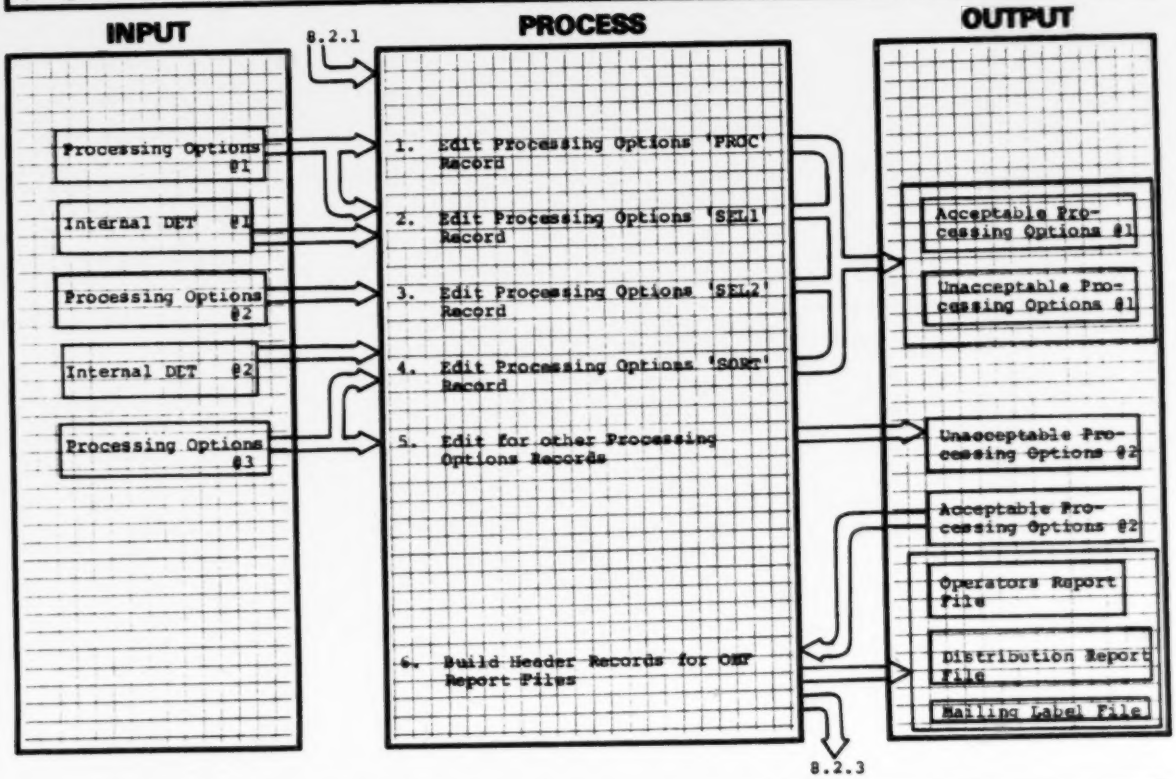
Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2/2/77 **Page:** 1 **of** 1
Diagram No.: 8.2.1 **Description:** Build Internal DET



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An internal Data Element Table (DET) is built utilizing the DET for the Operator and Mailing File (OMF). Only the file start position, data length, input length, and Mnemonic Name are used to edit the Processing Options and to build the sort key.		OPER020	MSIS. 201

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Operator and Mailing **Date:** 2/2/77 **Page:** 1 of 1
Diagram No.: 8.2.2 **Description:** Edit Processing Options

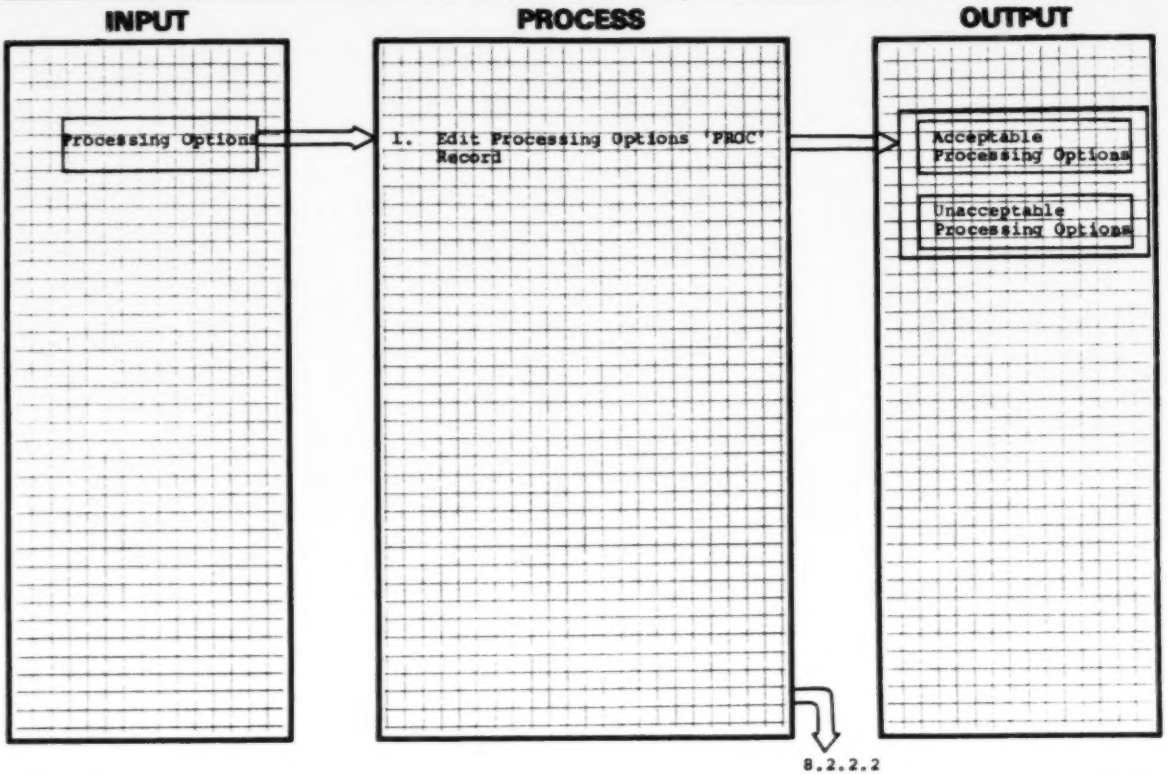


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options record with 'PROC' in positions 1-4.	8.2.2.1	OPER020	
2	Edit the Processing Options record with 'SEL1' in positions 1-4.	8.2.2.2	OPER020	
3	Edit the Processing Options record with 'SEL2' in positions 1-4.	8.2.2.3	OPER020	
4	Edit the Processing Options record with 'SORT' in positions 1-4.	8.2.2.4	OPER020	
5	Edit records with other than the above four keywords in positions 1-4.	8.2.2.5	OPER020	
6	Build the Header Records for the Operator and Mailing Report Files.	8.2.2.6	OPER020	
	Note: Any Processing Options in error will cause error messages to be printed on the Standard Selection Statistics Report. (see HIPO 8.2.5)			

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2/2/77 **Page:** 1 **of** 1

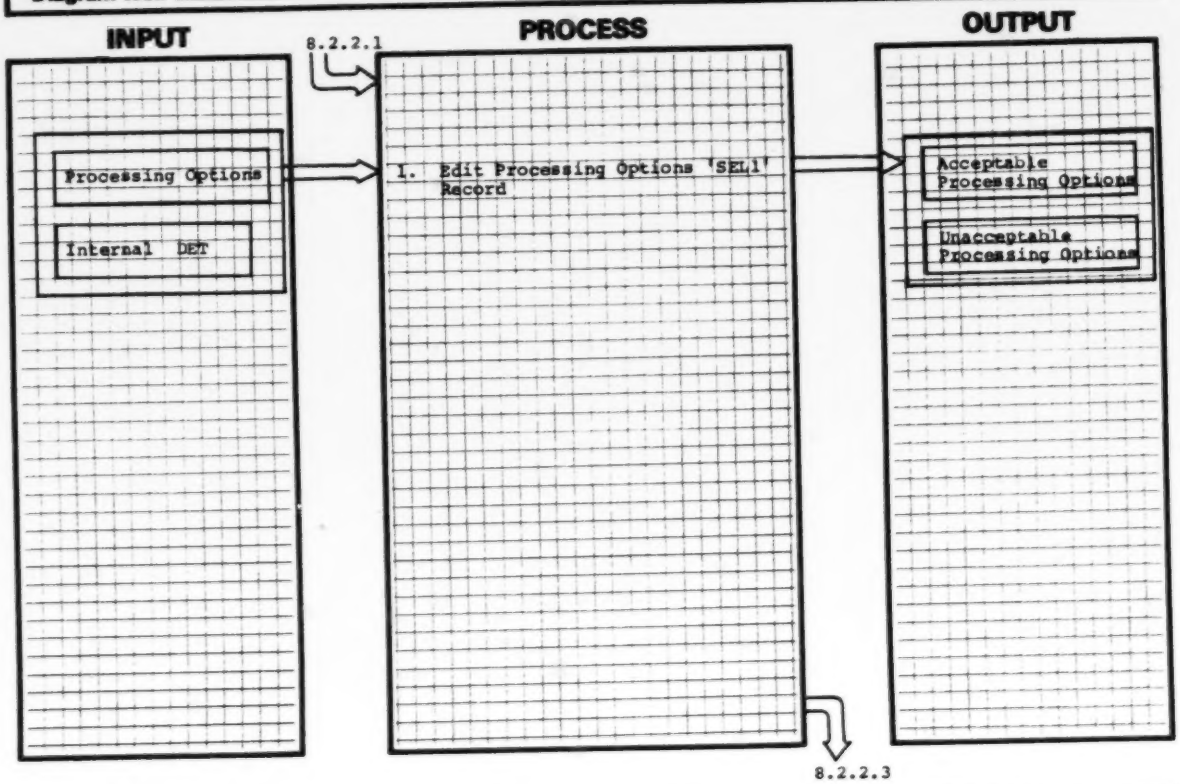
Diagram No.: 8.2.2.1 **Description:** Edit Processing Options 'PROC' Record



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options Record with 'PROC' in positions 1-4 of the record as follows: a. The current date must be a valid date. If it is not, default to a blank string. b. The Certified Operators Report Production option must be 'Y' or 'N'. If it is not, default to 'N'. c. The Mailing Distribution Report Production option must be 'Y' or 'N'. If it is not, default to 'N'. d. The Mailing Label Production option must be 'Y' or 'N'. If it is not, default to 'N'. e. The number of labels filed must be numeric. If it is not, default to '1'. If no 'PROC' record exists, processing should be terminated. Note: If any defaults are taken, warning messages are written on the Standard Selection Statistics Report. (See HIPO 8.2.5)		OPER020	210 102

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2/2/77 **Page:** 1 of 1
Diagram No.: 8.2.2.2 **Description:** Edit Processing Options 'SEL1' Record

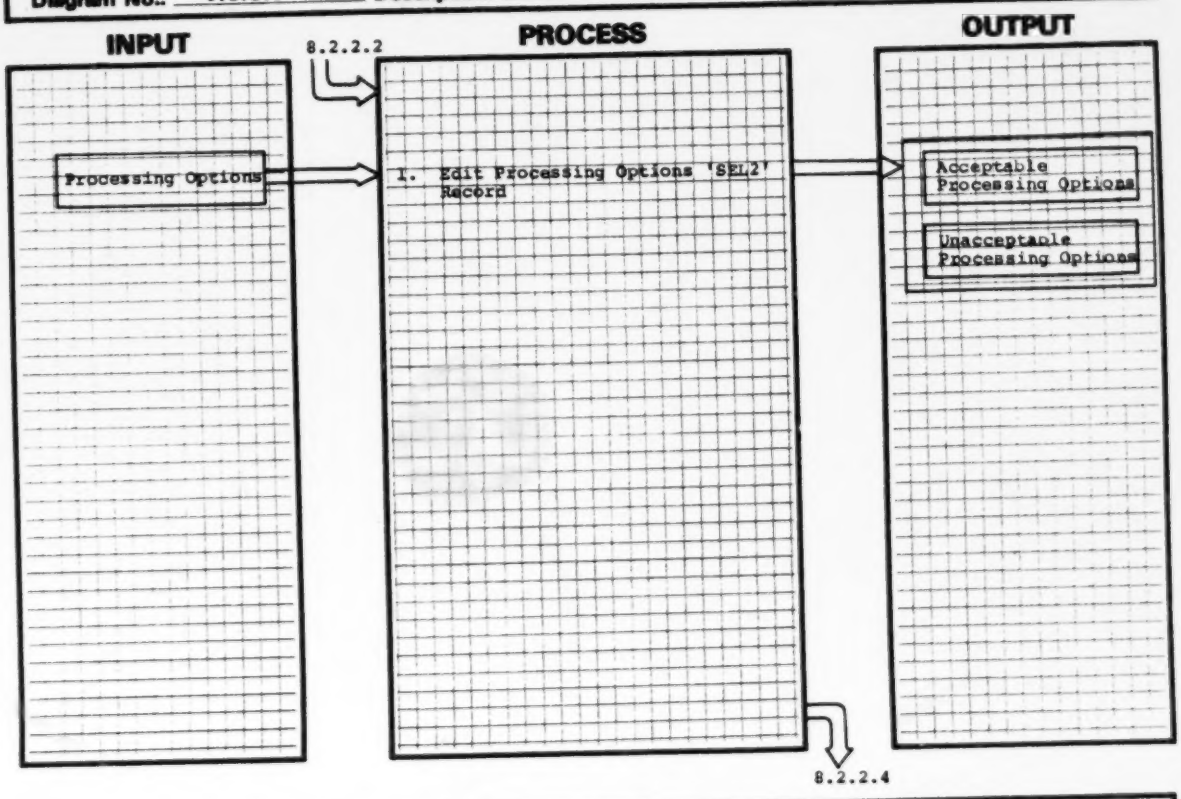


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL1' in positions 1-4 of the records as follows: a. OMFI-SELECT-1-MNEMONIC, positions 5-14, must equal one of the mnemonic names on the record layout for the Operator and Mailing File (OMF). This edit is hard coded into the program. b. OMFI-SELECT-1-DE-VALUE, positions 15-29, must have blanks in positions (DET-INPUT-LENGTH plus 15) to 29 where DET-INPUT-LENGTH is the length of a data element associated with the mnemonic name matched in 1.a. above. Positions 15 to (DET-INPUT-LENGTH plus 14) must be either numeric or alphanumeric as specified by the Data Element Dictionary (DED) for that particular data element. Additionally, if the data element is a date, it is checked for validity and then converted to Julian for comparision purposes. c. OMFI-SELECT-1-DE-NO, positions 30-31, must be a number from 01 to 35 and must be a different number from all other 'SEL1' records. If there are no 'SEL1' records or if an error exists on any 'SEL1' record, then the record is in error and will be written on the Standard Selection Statistics Report. Appropriate error messages for the 'SEL1' Processing Options records may be found by referencing the Error Code Instructions. If any errors exist, processing will be terminated.		OPER020	104 213

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2/2/77 **Page:** 1 of 1

Diagram No.: 8.2.2.3 **Description:** Edit Processing Options 'SEL2' Record

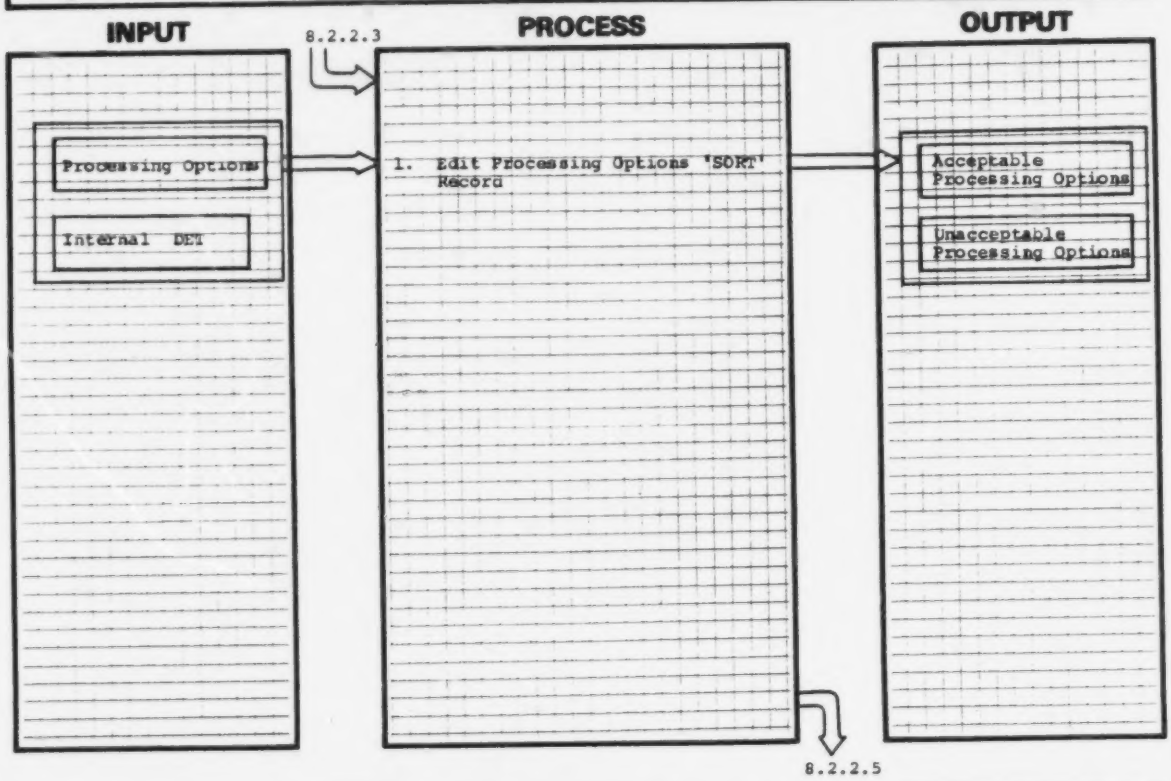


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SEL2' in positions 1-4 of the records as follows: a. Each non-blank OMFI-SELECT-2-SYMBOL, must have a corresponding 'SEL1' record, determined by OMFI-SELECT-1-DE-NO being equal to the array position of the OMFI-SELECT-2-SYMBOL being edited. In addition, the OMFI-SELECT-2-SYMBOL must equal one of the following operational symbols: LT = less than EQ = equal to GT = greater than NL = not less than NG = not greater than NX = does not exist blank Note: If there are more than 35 'SEL2' records, if no 'SEL2' record exists, or if an error exists on a 'SEL2' record, then the record is in error and will be written on the Standard Selection Statistics Report. If any errors exist, processing will be terminated.		OPER020	105 214

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2/2/77 **Page:** 1 **of** 1

Diagram No.: 8.2.2.4 **Description:** Edit Processing Options 'SORT' Record

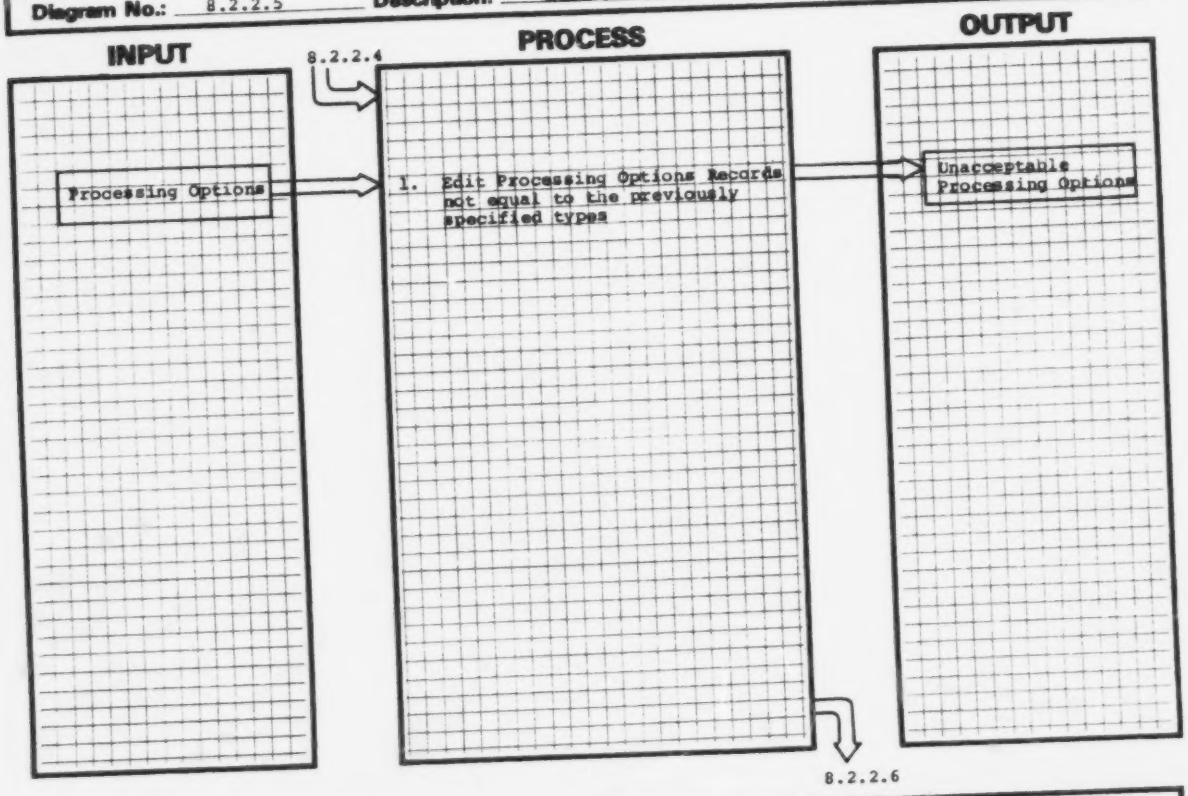


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit the Processing Options records with 'SORT' in positions 1-4 of the records as follows: a. OMFI-SORT-SEQUENCE determines the sequence in which the sort key is built. It must be numeric or blank. If numeric, the OMFI-SORT-SEQUENCE values must begin with 01 and be sequentially incremented by 1 to a maximum of 30. If blank, OMFI-SORT-MNEMONIC and OMFI-SORT-MODE must also be blank indicating that no more SORT Processing Options need to be edited. b. OMFI-SORT-MNEMONIC determines the data elements to be used in building the sort key. If the OMFI-SORT-MNEMONIC is non-blank, it must be a mnemonic name on the Internal Data Element Table (DET). If OMFI-SORT-SEQUENCE is non-blank, then OMFI-SORT-MNEMONIC must be present. c. OMFI-SORT-MODE determines the method in which the data element is used in building the sort key. If non-blank, it must be equal to 'A' or 'D'. If OMFI-SORT-SEQUENCE is non-blank, then OMFI-SORT-MODE must be present. As each OMFI-SORT-MNEMONIC is edited, the lengths of the values represented by the mnemonic (DET-INPUT-LENGTH) is totaled. If a length exceeds a value of 15 or if the mnemonic references a decimal number, a value of 15 is added to the total. This total must never exceed 30 or the specified SORT is in error. If present, the first 'SORT' Processing Options record must contain at least one entry. If an error exists on any 'SORT' record, then it will be written on the Standard Selection Statistics Report and processing will be terminated.		OPER020	103 212

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2/2/77 **Page:** 1 of 1

Diagram No.: 8.2.2.5 **Description:** Edit for Other Processing Options Records

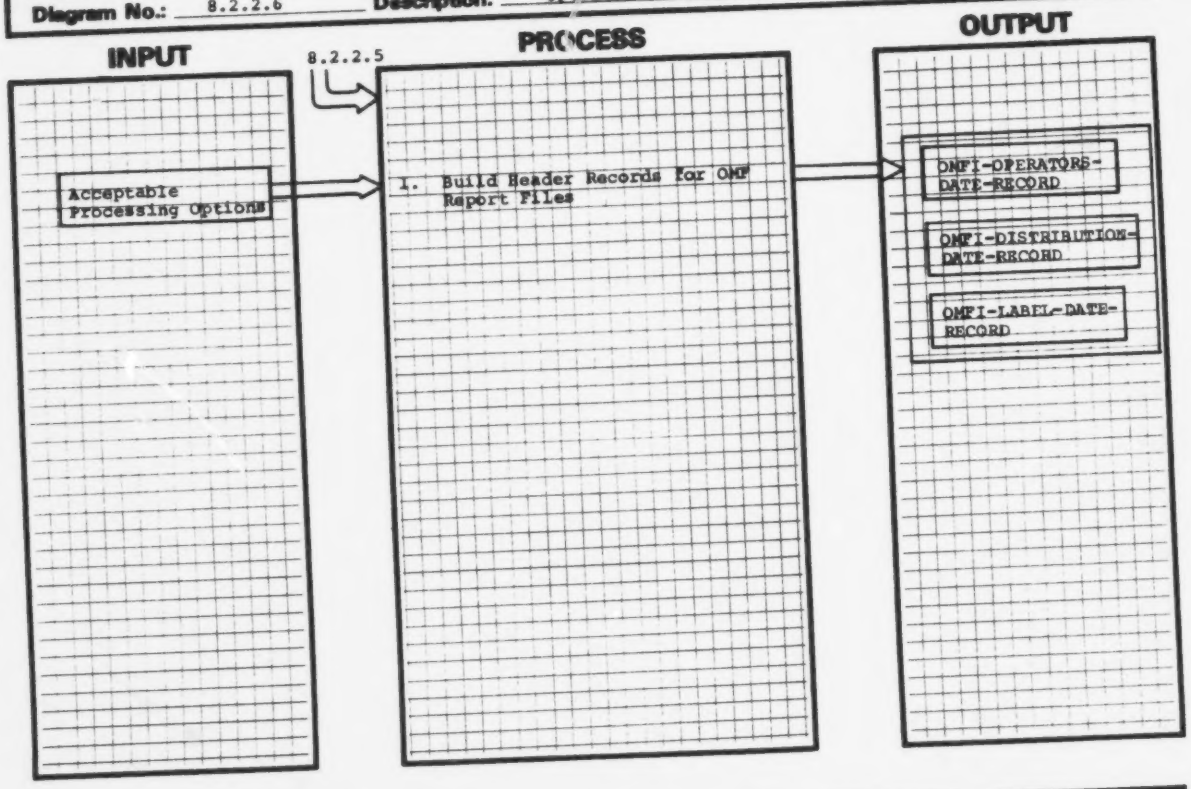


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Edit all other Processing Options Records. All of these records are in error and processing should be terminated.		OPER020	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Operator and Mailing Date: 2/2/77 Page: 1 of 1

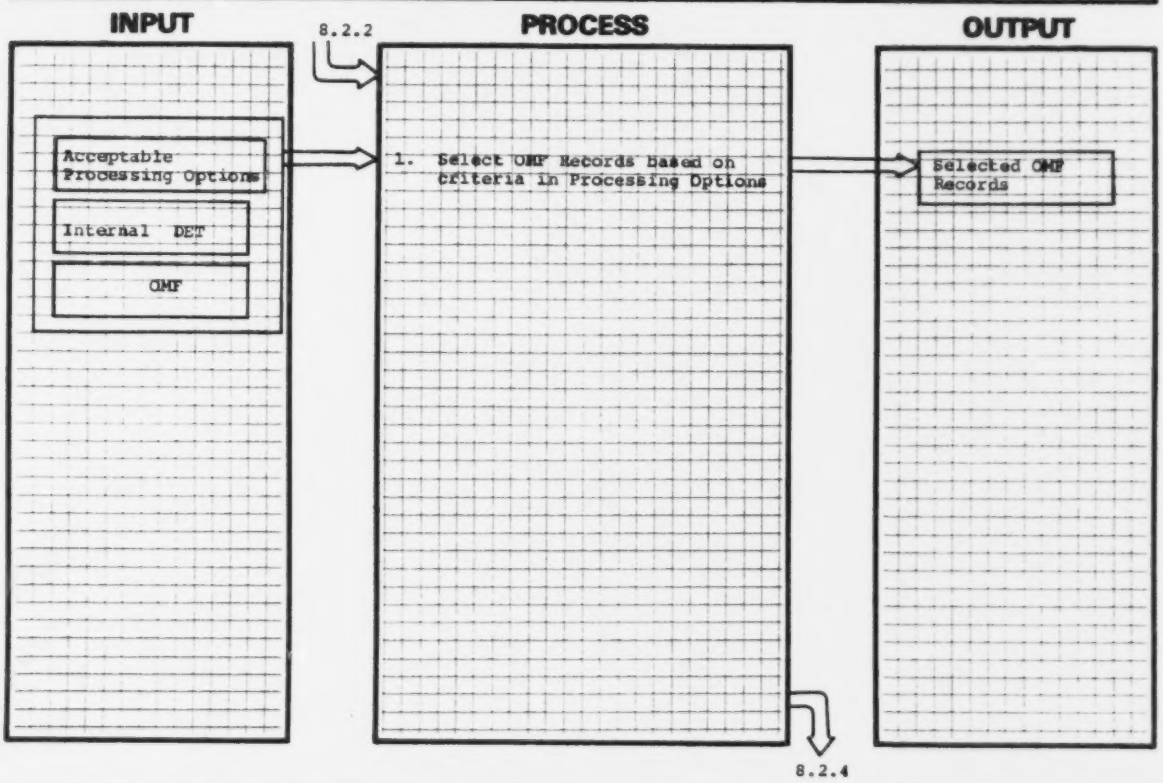
Diagram No.: 8.2.2.6 Description: Build the Header Records for the Operator and Mailing Report Files



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Build Header Records for the Report Files as follows: a. For all three files, use 'LOW-VALUES' for the sort field. b. For all three files, use the current date from the Processing Options 'PROC' record for the date field. If any Report Files are not produced, use zeros for the date field. c. For the Operators Date Record, move 'LOW-VALUES' to OMFI-OD-REASON and OMFI-OD-ADD-ID. Move 'CERTIFIED OPERATORS REPORT' to OMFI-OD-REPORT-TITLE. Move blanks to OMFI-OD-HEADER1 and OMFI-OD-HEADER2. d. For the Distribution Date Record, move 'LOW-VALUES' to OMFI-DD-REASON and OMFI-DD-ADD-ID. Move 'MAILING DISTRIBUTION REPORT' to OMFI-DD-REPORT-TITLE. Move blanks to OMFI-DD-HEADER1 and OMFI-DD-HEADER2. e. For the Label Date Record, move the number of labels from the Processing Options 'PROC' record to OMFI-LD-NUMBER-OF-LABELS.		OPER020	207 208 215

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2/2/77 **Page:** 1 of 1
Diagram No.: 8.2.3 **Description:** Select OMF Records

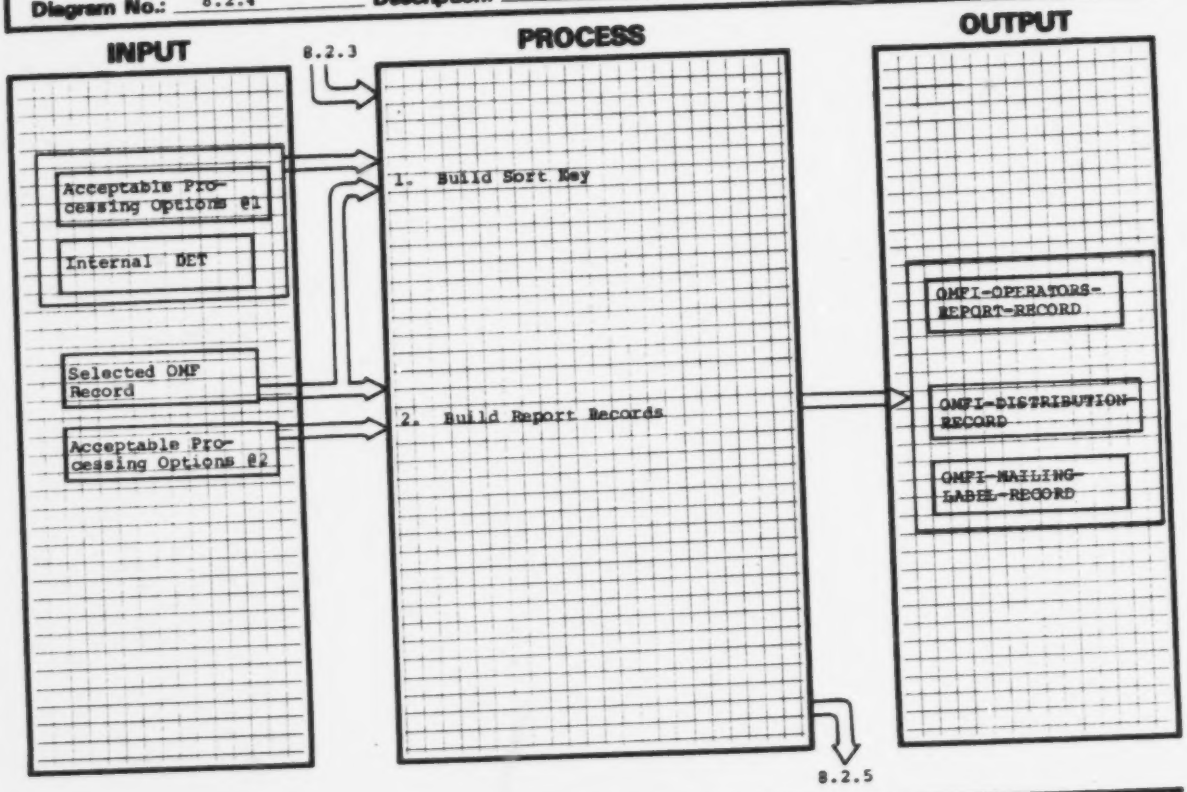


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Read an Operator and Mailing File (OMF) record. For each mnemonic name, OMFI-SELECT-1-MNEMONIC specified on the 'SEL1' records, obtain the corresponding data element value from the OMF record. If the OMFI-SELECT-1-MNEMONIC references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000 If the OMFI-SELECT-1-MNEMONIC represents a value with multiple occurrences (maintained in an array), all such values must be obtained. If the OMFI-SELECT-1-MNEMONIC represents a value with a length greater than 15, only obtain the first 15 positions of the value. Using those values obtained from the OMF record, examine the logic established in each 'SEL2' record to determine if the OMF record should be selected. If the Nth OMFI-SELECT-1-DE-VALUE from the 35 position array of a 'SEL2' record is non-blank, then compare the appropriate value from a 'SEL1' record (OMFI-SELECT-1-DE-VALUE, where OMFI-SELECT-1-DE-NO = N) with the corresponding value (same mnemonic name) obtained from the OMF record. The comparison between these two values is made according to the Nth operational symbol (see HIPO 8.2.2.3). If there is no unique corresponding value (values exist in an array), then each value in the array must be compared until one satisfies the conditions of the comparison. If the OMF record meets all the above comparison criteria, then the OMF record is selected. Each OMF record is processed using all 'SEL2' records so that the selection counts are properly maintained.		OPER020	200

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Operator and Mailing Date: 2/2/77 Page: 1 of 3

Diagram No.: 8.2.4 Description: Build Selected OMF Report Records



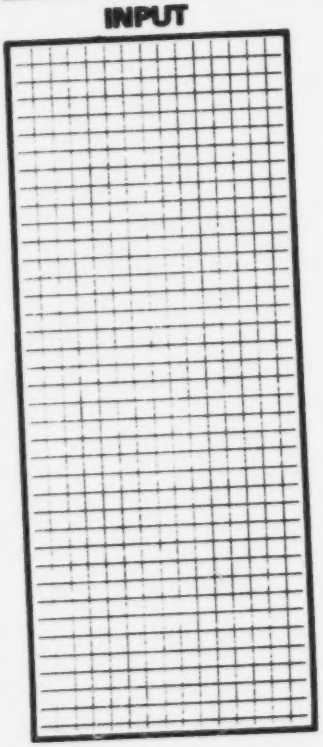
STEP	EXTENDED DESCRIPTION	REFERENCES		
		MPO	PROGRAM	OTHER
1	Build a sort key with a maximum length of 30 positions for each record on the Operator and Mailing File (OMF) based on the criteria on the 'SORT' Options records as follows: a. Redefine the entire (or if array: non-variable portion of the) OMF record as an array of one character values. b. Match the OMFI-SORT-MNEMONIC with the DET-MNEMONIC in order to find the associated DET-FILE-START-POSITION and the DET-DATA-LENGTH. These data elements are used as follows: (1) DET-FILE-START-POSITION is normally used to find the beginning of the data element value as it exists on the OMF. (2) DET-DATA-LENGTH is normally used to indicate the number of positions the data element occupies on the OMF. c. In order to obtain a value to be used in building the sort key, one of the following is done: (1) If the mnemonic references a decimal number, construct a 15 position alphanumeric field from the numeric portion and decimal indicator values placing the decimal in position 6 and replacing all blanks with zero. For example: Numeric portion = 000123 Decimal indicator = 4 Fifteen position alphanumeric = 00000.012300000		OPER020	200 207 208 215

MODEL STATE INFORMATION SYSTEM

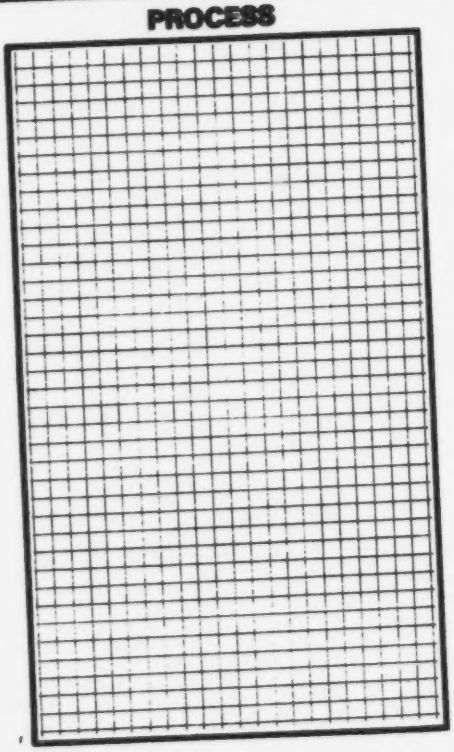
Diagram Type: Detail Subsystem: Operator and Mailing Date: 2/2/77 Page: 2 of 3

Diagram No.: 8.2.4 Description: Build Selected OMF Report Records

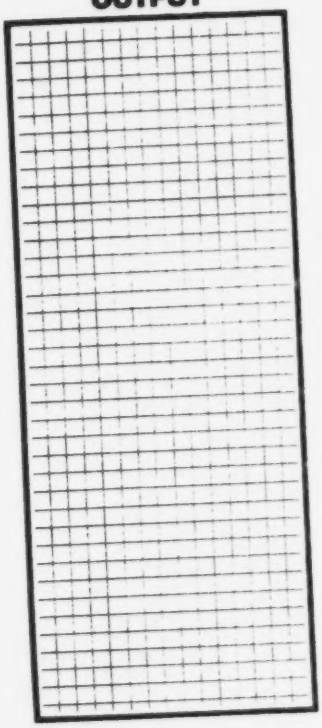
INPUT



PROCESS



OUTPUT



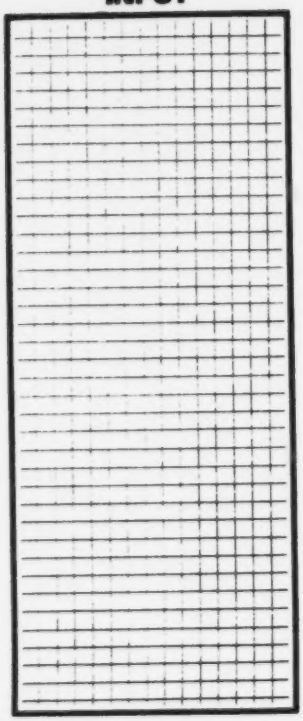
STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	(2) If the DET-FILE-START-POSITION is filled with asterisks, then the data element appears in an array and has no unique starting position. In this case, all possible values in the array must be checked as follows: (a) If the OMFI-SORT-MODE = 'A' (ascending), the lowest value of the data element must be used in building the sort key. (b) If the OMFI-SORT-MODE = 'D' (descending), the highest value of the data element must be used in building the sort key. If the data element in the array references a decimal number, it must first be converted to a 15 position alpanumeric field as in (1) before the check referenced in (a) or (b) is performed. (3) Otherwise use the DET-FILE-START-POSITION and DET-DATA-LENGTH to obtain the value for building the sort key. d. If the OMFI-SORT-MODE = 'A' (ascending), move the value obtained in c. to the proper location in the sort key. If the OMFI-SORT-MODE = 'D' (descending), redefine the data element value obtained in c. as binary, subtract it from the highest binary number which could be placed in that field and move the result into the proper location in the sort key. The proper location is determined by the OMFI-SORT-SEQUENCE. Note: If there are no 'SORT' Processing Options records, move the counter showing the current number of records selected into the sort key. For example, when building the sort			

MODEL STATE INFORMATION SYSTEM

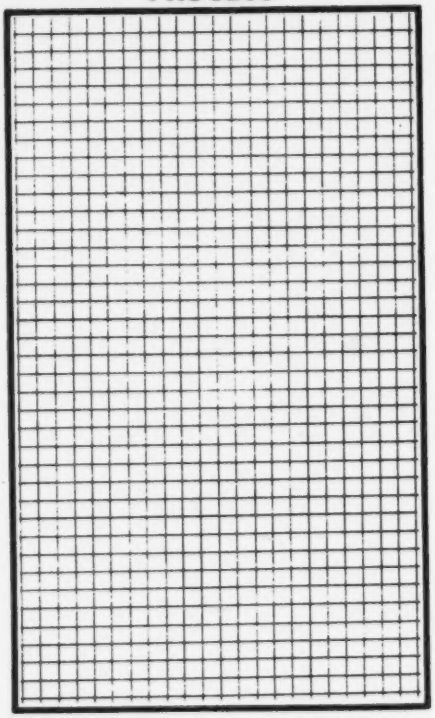
Diagram Type: Detail Subsystem: Operator and Mailing Date: 2/2/77 Page: 3 of 3

Diagram No.: 8.2.4 Description: Build Selected OMF Report Records

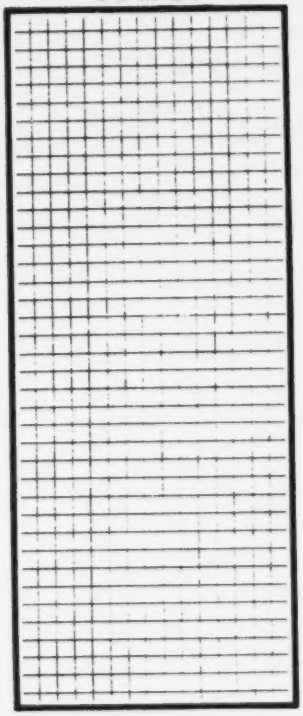
INPUT



PROCESS



OUTPUT

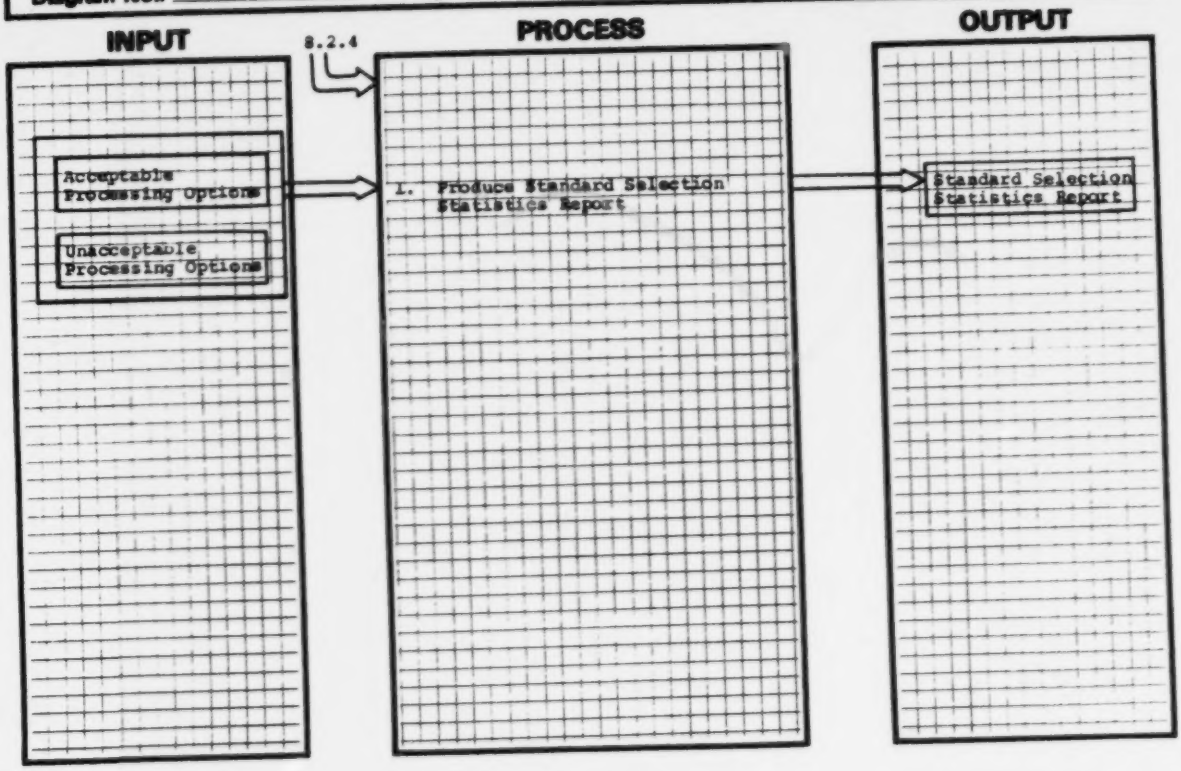


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
	key for the 99,999th record selected, the sort key will be: 000000000000000000000000099999 30 positions			
2	The selected OMF records are combined with the Sort Key to produce the report records specified on the 'PROC' options record as follows: a. If OMFI-OM20-PROC-CO-REPORT is equal to 'Y', then build an OMFI-OPERATORS-REPORT-RECORD. b. If OMFI-OM20-PROC-MD-REPORT is equal to 'Y', then build an OMFI-DISTRIBUTION-RECORD. c. If OMFI-OM20-PROC-ML-REPORT is equal to 'Y', then build an OMFI-MAILING-LABEL-RECORD.		OPER020	205 206 211

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 2/2/77 **Page:** 1 of 1

Diagram No.: 8.2.5 **Description:** Produce Standard Selection Statistics Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	The Standard Selection Statistics Report is always produced. The following two formats may be used: a. The Standard Selection Statistics Report contains: (1) the sort sequence mnemonics (2) the sort mode (3) the selection criteria (4) the total records selected under each selection criteria (5) the total of all records selected for the report (6) the percent of the file selected. b. If any Processing Options records are in error, the records and associated error messages are produced instead of or in addition to the information in a.		OPER020	MSIS. 306 MSIS. 309

NARRATIVE

SUBSYSTEM: Operator and Mailing
PROGRAM NAME: OPER030
DATE: January 12, 1977

I. OBJECTIVES:

The objective of this program is to produce the Certified Operators Report or the Operators Activity Report.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Operator's Report File	OMFI-OPERATORS-REPORT-RECORD	OPER.205
		OMFI-OPERATORS-DATE-RECORD	OPER.207

B. Processing Options Record:

Not applicable

III. OUTPUTS:

A. Record Layouts:

Not applicable

B. Report Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Operators Activity Report		OPER.300
2.	Certified Operators Report		OPER.301

C. Turnaround Documents:

Not applicable

IV. FUNCTIONS:

1. Header lines for the Certified Operators Report or the Operators Activity Report are produced. The report title and dates for the header lines are obtained from the first record of the Operators Report File. If the Operators Report File was produced by OPER010, then the report title will be Operators Activity Report. If the Operators Report file was produced by OPER020, then the report title will be Certified Operators Report. Detail lines are produced using Operators Report Records from the Operators Report File. The Operators Activity Report will appear in sequence by Listing Reason and Addressee Identification Number. The Certified Operators Report will appear in the sequence designated in the Sort Options record of the selections program (OPER020).

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

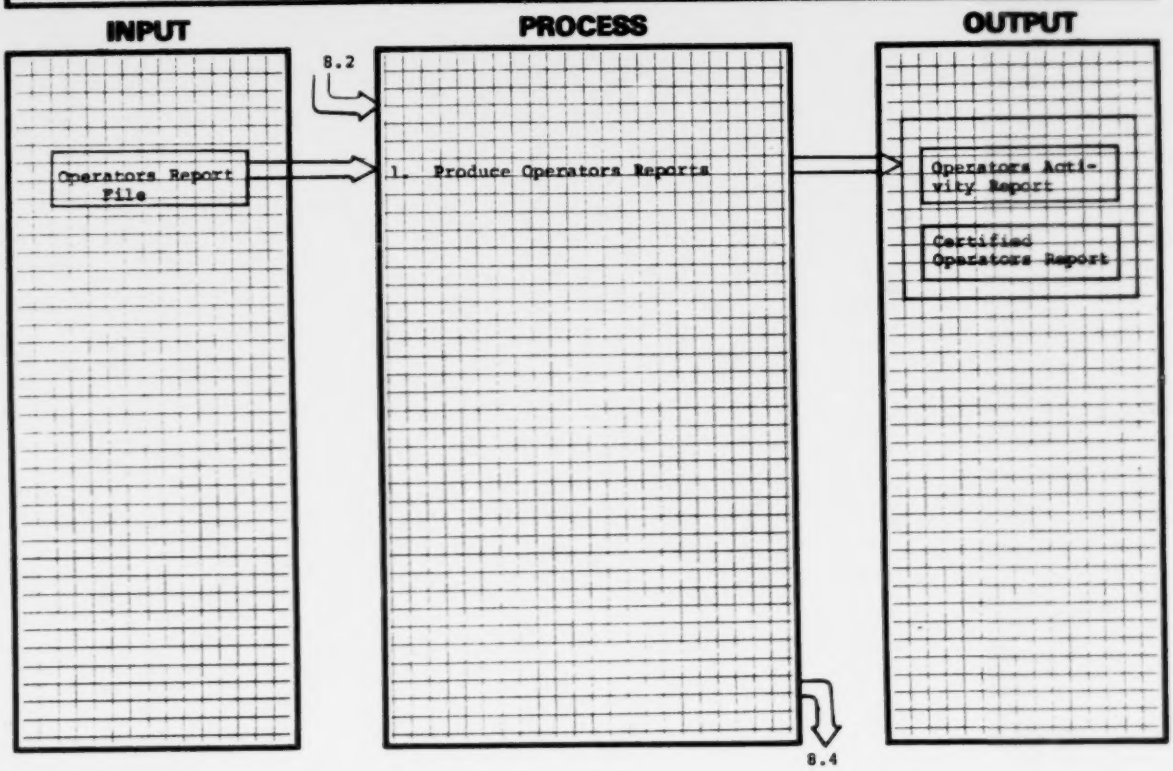
Not applicable

B. Data Element Descriptions:

Not applicable

MODEL STATE INFORMATION SYSTEM

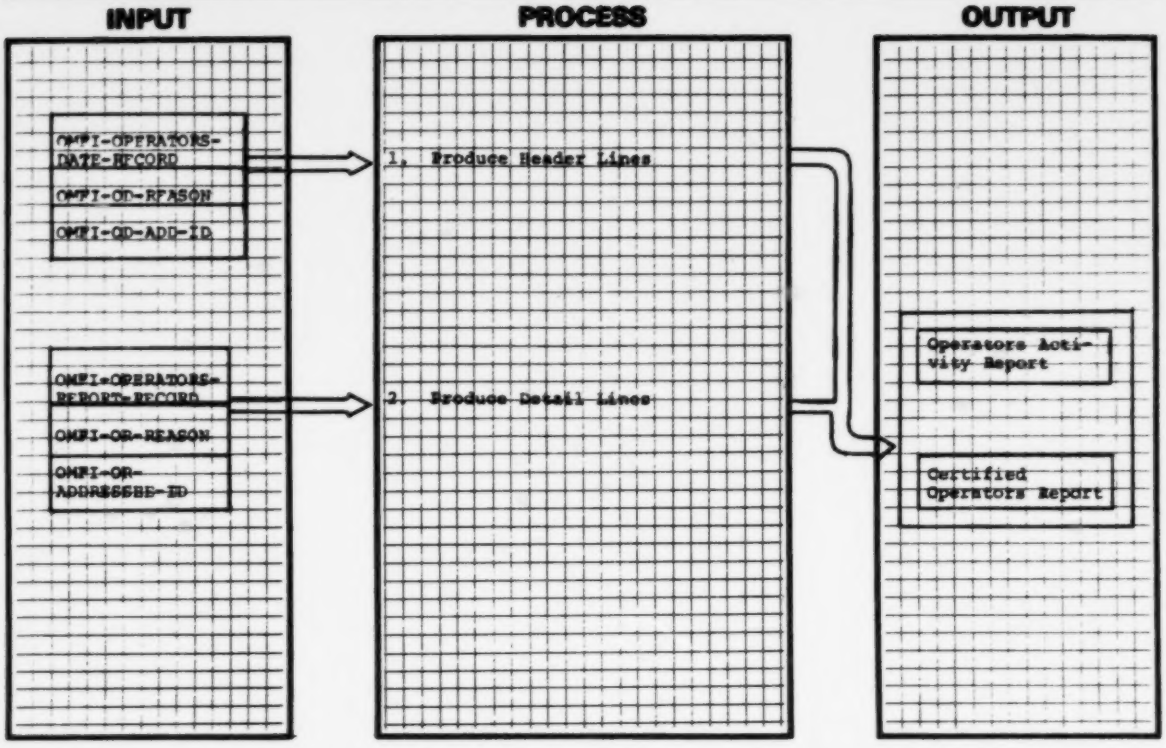
Diagram Type: Overview **Subsystem:** Operator and Mailing **Date:** 1/12/77 **Page:** 1 of 1
Diagram No.: 8.3 **Description:** Operators Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	An Operators Report is produced using the Operators Report File. The first record on the file contains the title of the report that is to be produced. If the Operators Report File was created in OPER010, then the report title will be Operators Activity Report. If the Operators Report File was created in OPER020, then the report title will be Certified Operators Report and the file will be externally sorted on the sort key designated by the Processing Options 'SORT' records.	8.3.1	OPER030	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 1/12/77 **Page:** 1 of 1
Diagram No.: 8.3.1 **Description:** Operators Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If OMFI-OD-DATE is zero, then discontinue processing. Otherwise produce the header lines of the report as follows: a. Move OMFI-OD-DATE to the date field in the third header line b. Move OMFI-OD-REPORT-TITLE to the title field in the fourth header line. c. Move OMFI-OD-HEADER1 to the listing reason field in positions 123 to 129 of the sixth header line. d. Move OMFI-OD-HEADER2 to the listing reason field in positions 123 to 129 of the seventh header line.		OPER030	207 300 301
2	Convert OMFI-OR-REASON as follows: I = Incomplete N = New D = Deletion blank = blanks Convert OMFI-OR-RENEWAL-DATE from Julian format (YYDDD) to Calendar format (MMDDYY) and then produce the detail lines of the report.		OPER030	205 300 301

NARRATIVE

SUBSYSTEM: Operator and Mailing
PROGRAM NAME: OPER040
DATE: January 12, 1977

I. OBJECTIVES:

The objective of this program is to produce the Addressees Activity Report or the Mailing Distribution Report.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Distribution Report File	OMFI-DISTRIBUTION-RECORD	OPER.206
		OMFI-DISTRIBUTION-DATE-RECORD	OPER.208

B. Processing Options Record:

Not applicable

III. OUTPUTS:

A. Record Layouts:

Not applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Addressees Activity Report	OPER.303
2.	Mailing Distribution Report	OPER.302

C. Turnaround Documents:

Not applicable

IV. FUNCTIONS:

1. Header lines for the Addressees Activity Report or the Mailing Distribution Report are produced. The report title and dates for the header lines are obtained from the first record of the Distribution Report File. If the Distribution Report File was produced by OPER010, then the report title will be Addressees Activity Report. If the Distribution Report File was produced by OPER020, then the report title will be Mailing Distribution Report.

   Detail lines are produced using Distribution Records from the Distribution Report File. The Addressees Activity Report will appear in sequence by Listing Reason and Addressee Identification Number. The Mailing Distribution Report will appear in the sequence designated in the Sort Options record of the selection program (OPER020).

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

   Not applicable

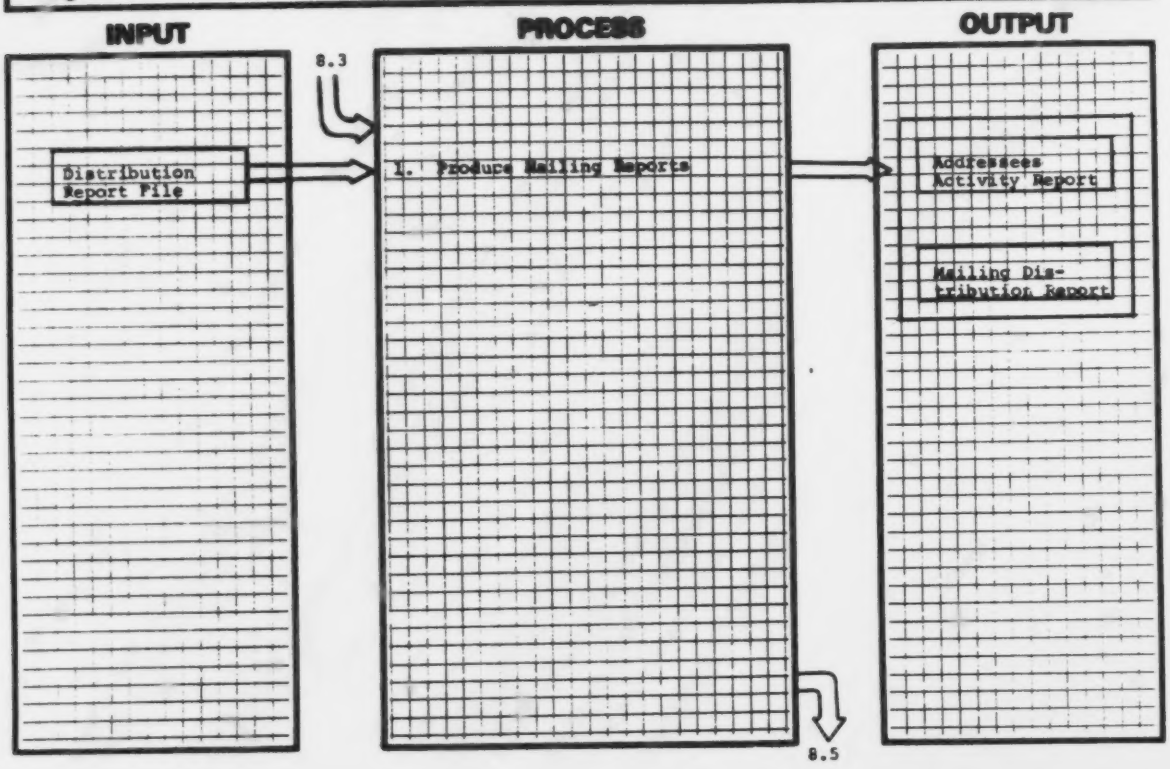
B. Data Element Descriptions

   Not applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview Subsystem: Operator and Mailing Date: 1/12/77 Page: 1 of 1

Diagram No.: 8.4 Description: Distribution Report

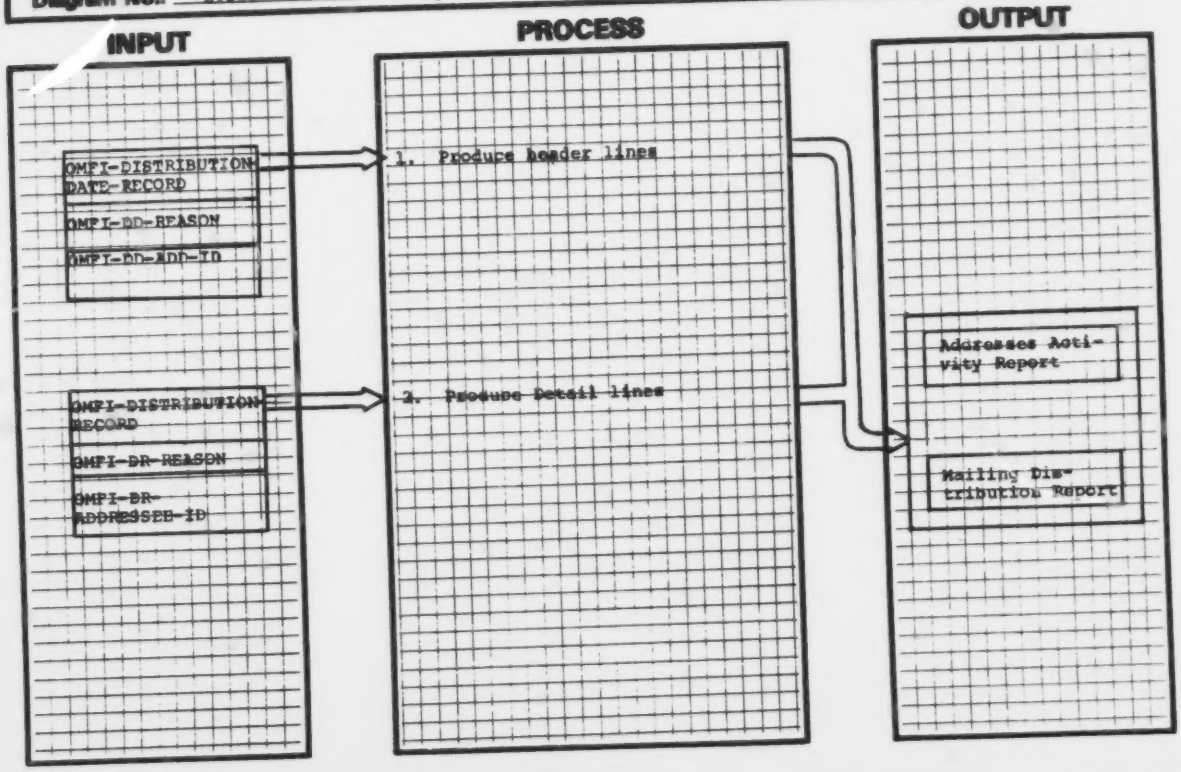


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	A Mailing Report is produced using the Distribution Report File. The first record on the file contains the title of the report that is to be produced. If the Distribution Report File was created in OPER010, then the report title will be Addressees Activity Report. If the Distribution Report File was created in OPER020, then the report title will be Mailing Distribution Report and the file will have been externally sorted on the sort key designated by the Processing Options 'SORT' records.	8.4.1	OPER040	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail **Subsystem:** Operator and Mailing **Date:** 1/12/77 **Page:** 1 of 1

Diagram No.: 8.4.1 **Description:** Distribution Report



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If OMFI-DD-DATE is zero, then discontinue processing. Otherwise produce the header lines of the report as follows: a. Move OMFI-DD-DATE to the date field in the third header line. b. Move OMFI-DD-REPORT-TITLE to the title field in the fourth header line. c. Move OMFI-DD-HEADER1 to the listing reason field in positions 107 to 113 of the fifth header line. d. Move OMFI-DD-HEADER2 to the listing reason field in positions 107 to 113 of the sixth header line.		OPER040	208 302 303
2	Convert OMFI-DR-REASON as follows: I = Incomplete N = New D = Deletion blank = blanks and then produce the detail lines of the report.		OPER040	206 302 303

NARRATIVE

SUBSYSTEM: Operator and Mailing
PROGRAM NAME: OPLR050
DATE: January 12, 1977

I. OBJECTIVES:

The objective of this program is to produce mailing labels for mailing material to local governments, cities, consultants, and any other addressee types to be included on a mailing distribution list.

II. INPUTS:

A. Record Forms and Layouts:

	NAME	RECORD NAME	EXHIBIT LAYOUT
1.	Mailing Label File	OMFI-MAILING-LABEL-RECORD	OPER.211
		OMFI-LABEL-DATE-RECORD	OPER.215

B. Processing Options Record:

Not applicable

III. OUTPUTS:

A. Record Layouts:

Not applicable

B. Report Layouts:

	NAME	EXHIBIT LAYOUT
1.	Mailing Labels	OPER.304

C. Turnaround Documents:

Not applicable

IV. FUNCTIONS:

1. The first record on the Mailing Label File contains the number of labels to be produced for each detail record on the file. Mailing Labels are produced using Mailing Label Records from the Mailing Labels File.

V. ASSOCIATED DOCUMENTS:

A. Data Entry and Keypunch Instructions:

Not applicable

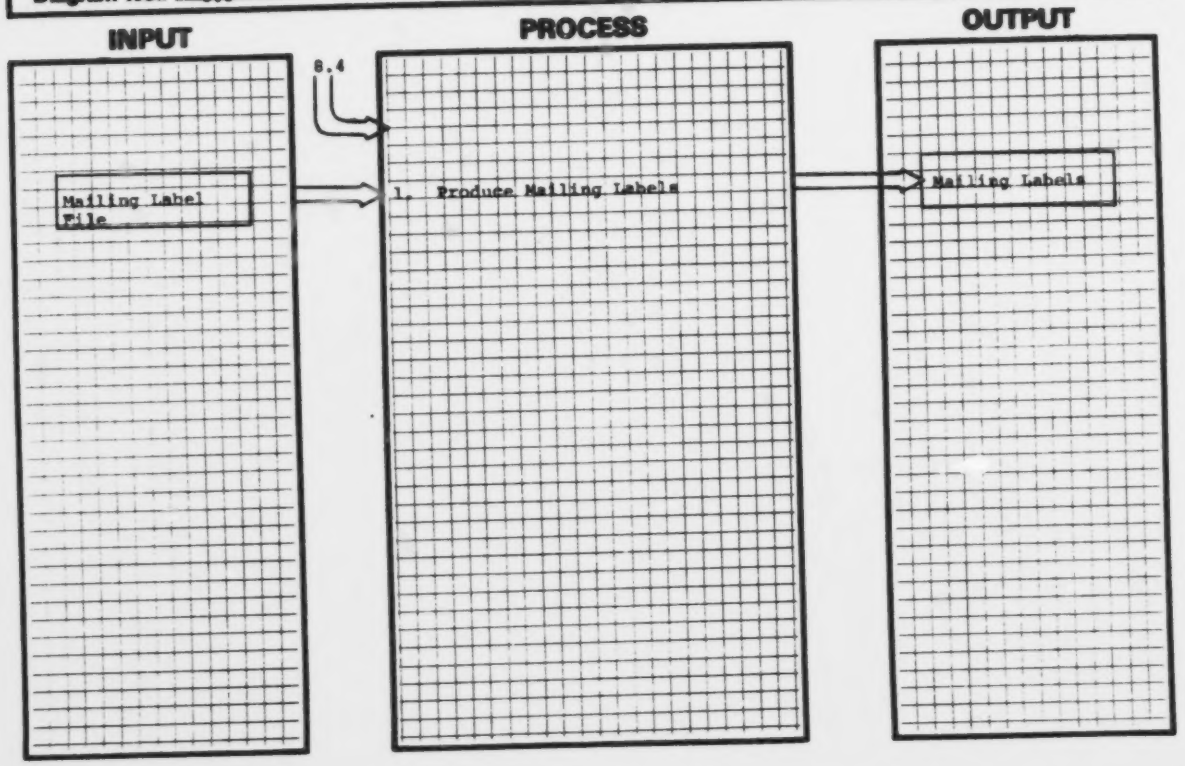
B. Data Element Descriptions:

Not applicable

MODEL STATE INFORMATION SYSTEM

Diagram Type: Overview **Subsystem:** Operator and Mailing **Date:** 1/12/77 **Page:** 1 of 1

Diagram No.: 8.5 **Description:** Mailing Labels

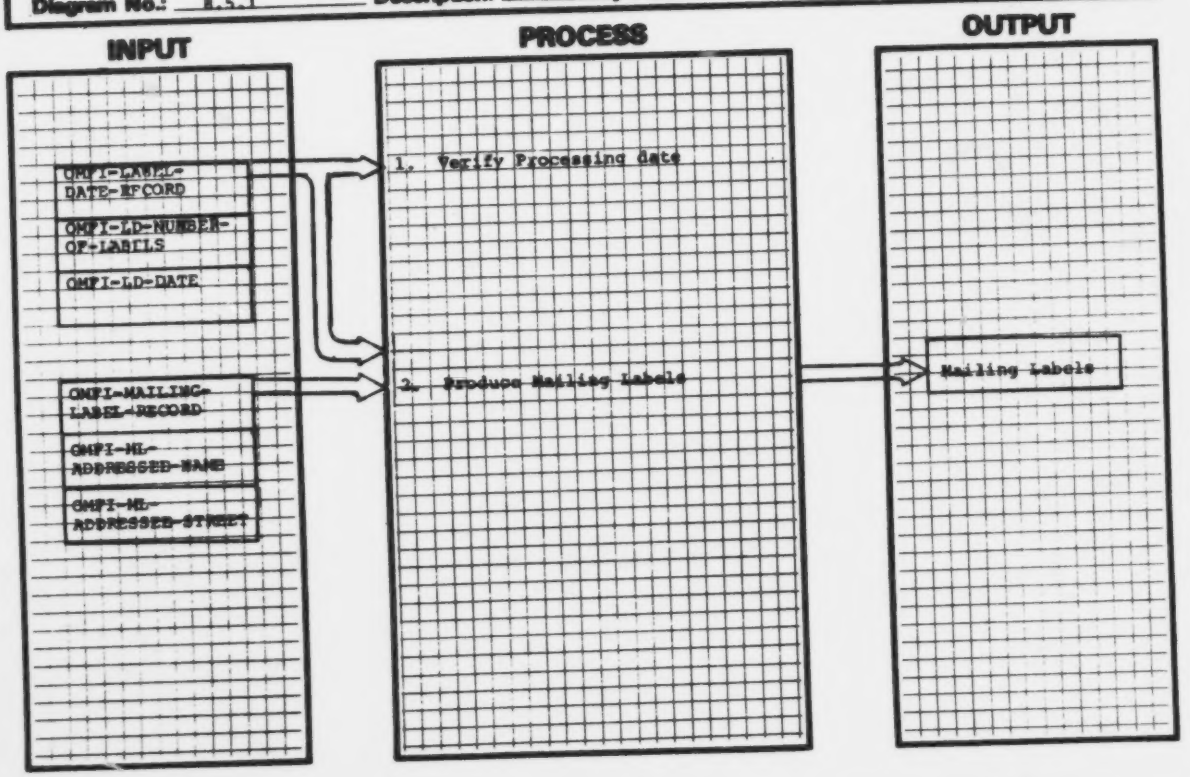


STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	Mailing labels are produced using the Mailing Label File. The first record on the file contains a number indicating how many labels are to be produced for each detail record. The Mailing Labels File is created in OPER020 and is externally sorted on the sort key designated by the Processing Options 'SORT' records.	8.5.1	OPER050	

MODEL STATE INFORMATION SYSTEM

Diagram Type: Detail Subsystem: Operator and Mailing Date: 1/12/77 Page: 1 of 1

Diagram No.: 8.5.1 Description: Mailing Labels



STEP	EXTENDED DESCRIPTION	REFERENCES		
		HIPO	PROGRAM	OTHER
1	If OMFI-LD-DATE is zero, then discontinue processing.		OPER050	215
2	Each detail record is used to produce the required number of labels specified by OMFI-LD-NUMBER-OF-LABELS.		OPER050	211 304